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Graduate Teaching from the Specialist's Standpoint\*

W. MCKIM MARRIOTT

Dean and Professor of Pediatrics  
Washington University School of Medicine  
St. Louis, Mo.

American medical colleges have, in general, focused their attention almost exclusively on undergraduate instruction, which has shown tremendous improvement, especially during the last two decades. The fact seems to have been lost sight of that the education of the physician is not finished, but has only begun, when he receives his medical diploma. At the conclusion of the conventional medical course, the physician is turned out to shift for himself. He may, it is true, have received a type of training which fits him to continue his education, but even the best student will find it difficult to do so unless certain facilities are made available to him. He may read assiduously, but he cannot learn medicine from books and journals alone, and unless he is fortunate enough to have a good hospital connection, he is not likely to see a sufficient number of patients satisfactorily to pursue his self-education. Too often he continues to practice only the medicine he has learned in medical school, reads a few textbooks and his state medical journal, attends an occasional meeting of a medical society, and in a few years' time he is a "back number." If some special field of medicine attracts him, he may gradually shift his interest to that field, make it known that he wishes to see patients of a certain type, and he may develop into a specialist of sorts because of the type of patients coming to his office rather than on account of any specialized skill. Ultimately, he may become reasonably competent, but such a process of training is not an effective one.

If he decides that he wishes to obtain special training which would qualify him as a specialist, and is willing to give up the necessary time

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for the purpose, he may have difficulty in finding a suitable place where such training can be obtained, for there are only a few places where a definite effort is made to provide the medical graduate with the type of training comparable to that provided for the undergraduate, yet especially adapted to the requirements of a man entering a specialty.

What should be the character of the training provided for the graduate who desires to specialize? In the first place, it should be of such character as to avoid the danger of overspecialization. Every specialist must be, first of all, an internist. He must know medicine in the broadest sense and have a full appreciation of the place and relative importance of the specialty. The otolaryngologist who sees only the tonsils, adenoids and sinuses, or the urologist who forgets that the patient has heart, lungs and psychological reactions is the type of specialist who has brought specialization into disrepute. The surgeon who is a magnificent technician but a poor diagnostician may do more harm than good.

The training of the specialist, of necessity, begins with internal medicine, and the serving of a medical internship in a good hospital should be the prerequisite for acceptance of a man for training in a specialty. With this foundation, training in a specialty may be begun. Such training necessarily involves work with patients in the wards of a hospital, and above all in an outpatient department. The hospital should, preferably, be a general hospital, or, if a special hospital, it should be a part of a medical group, and likewise the outpatient department should be a part of a general dispensary. In the isolated special hospital and dispensary there is not likely to be sufficient contact with men in other fields; a narrow rather than a broad type of training is the result.

Adequate clinical facilities are essential, but not in themselves sufficient. There must be laboratories of anatomy, pathology and physiology to which the graduate student has free access. The student in the specialty must, first of all, learn in much greater detail than is possible in the conventional medical school courses the anatomy, pathology and physiology of those systems of the body with which the specialty is concerned. The graduate student in a surgical specialty should not be permitted to take a scalpel in his hand until he has demonstrated that he has a detailed knowledge of the anatomy, pathology and physiology of the regions concerned. Throughout his period of training he should spend as much time in the laboratories and the autopsy room as in the operating room or wards, and facilities must be available for his doing so under proper supervision.

The work in the outpatient department should be so arranged as to duplicate, as far as possible, the practice of the specialist in the private

office. The student should, under competent supervision, perform all procedures, both diagnostic and therapeutic, which he is likely to be called on to perform in every day office practice. It is essential that he do everything himself, from beginning to end, including history taking and laboratory examinations. After doing this, day after day, he will become really adept, and later, in his own office, he will not flounder around helplessly when his first patients arrive and attempt to apply, in an awkward manner, what he has learned from didactic lectures or from textbooks or from watching others work.

It is immaterial whether the graduate student has the status of an intern, an extern or a fellow, if he has the opportunity to work under the conditions outlined. The whole consideration is the character of the training offered. A man may serve an internship in a specialty and yet be trained inadequately, even though the members of the visiting staff be leaders in their profession, but uninterested in teaching the junior men. A course of training, to be satisfactory, must be systematized and co-ordinated. It must be as much of a "course" as is the undergraduate medical curriculum. A definite schedule of activities of the student should be arranged which insures his well rounded education in the specialty. There should be regular lectures and demonstrations throughout the year by men especially qualified to present special phases of the subject, and weekly conferences for the discussion of case histories and autopsy findings. If the student has an interest in research, and the ability to carry out investigative work, he should be given every encouragement, but not many men are so gifted. If a man can carry out a good piece of work and write a thesis worthy of publication, well and good, but this need not be an essential part of his training.

The special facilities necessary for the adequate training of the specialist are more likely to be found in the hospitals intimately associated with medical schools, and these facilities should, insofar as possible, be made available to graduate as well as undergraduate students, for the man in the field who wishes to come back for special preparation as well as for the recent graduate who wishes to train himself in a specialty before leaving the hospital group.

We have so far discussed the basic training of the specialist. Means should also be provided for his continued education. Short courses provide a means of meeting this need, the purpose of these courses being to acquaint the specialist with the most recent advances in the subject. These courses may be as short as a single week, but they should be planned as carefully as the longer courses. The elementary aspects of the subject need not be treated. In these courses an especial effort should be made to inform men

on those subjects in which the specialist has been found to be particularly deficient, as revealed by the results of examinations given by national boards of examiners in the individual specialties. The information obtained from such examining boards serves to indicate the deficiencies of previous training which have not been made up through practical experience. Instruction in special techniques and diagnostic procedures should be given.

We have so far discussed the training of the specialist, but training in the specialties is also needed by the general practitioner, who, we must remember, has not entirely disappeared from our midst. His requirements are quite different. He needs to learn the rudiments of the various specialties and particularly the more recent advances in the diagnosis and treatment of the more common conditions. He also needs to learn what can be accomplished by specialized procedures even though he himself may not be in a position to carry them out. In other words, he needs to know what the specialist can do for those cases which are beyond him.

Short courses for the general practitioner have their place in medical education, and these also should be planned carefully. They should be systematic and should not consist merely of a series of clinics on unrelated subjects and the demonstration of rare cases. Instruction should be given by the best men available, senior members of the staff and experienced teachers. Only too often the postgraduate student is turned over to the interns or junior members of the staff; or he may be permitted to roam about the wards and clinics with very little supervision, and pick up what he can. Under such circumstances he usually picks up very little.

A definite schedule covering the more essential topics should be followed. Where clinical cases are not available, case histories should be studied. It is not usually practical to allow students of this type to carry out more than the simplest procedures on patients, although those men who have more than average ability and technical skill might be allowed to carry out more complicated procedures with patients. Round table discussions led by the senior members of the staff may be made a valuable part of the instruction. These conferences should be informal and each member of the group urged to bring up for discussion his particular problems, the discussion being participated in by all members of the group.

A short and intensive course in which the men are kept occupied for the entire day serves the purpose better than longer and less carefully arranged courses. The man who gives up his practice to take such a course cannot afford to waste time. If he is given only two or three hours of lectures or clinics a day and allowed to shift for himself the rest of the time, he becomes dissatisfied. To keep a group of graduate students profitably occupied for the entire day taxes the resources of almost any

clinical department, so that it is hardly possible to expect that such courses will be given every month throughout the year. A department does well if it gives as many as two or three courses annually. Experience has shown that general practitioners will attend such courses and come long distances to do so.

Another type of postgraduate instruction is that exemplified by the periodic postgraduate assemblies which are held in various parts of the country, and by the special clinical weeks of medical societies, and regular county and district medical society meetings. These courses all have their value in the continuous education of the practitioner, but fall short in a number of particulars. Prominent specialists may be asked to address such meetings, but they only too often discuss obscure and unusual conditions and about all the general practitioner learns is where to send his next case of such an obscure condition, or the case requiring the highly specialized therapeutic procedure. When the essayist is a teacher, he may impart much valuable information and give the practitioner a sample of what he may expect to learn in a properly conducted graduate course.

The better type of practitioner is demanding opportunities for further training beyond the medical school course. His demand is a just one and it has been only too often ignored. We should meet his demand and give him the best we have.

**The Department of Regional Extension of  
The Albany Medical College  
With Particular Reference to Graduate Instruction\***

THOMAS ORDWAY

Dean, Albany Medical College  
Albany, New York

Five years have passed since the Albany Medical College, the medical department of Union University, received a fund to provide for the support of graduate work for practicing physicians, particularly those of rural areas. Because the graduate work is not an isolated activity, but an organic part of a larger program, we believe that its significance may best be appreciated, if it is presented against the background of the program as a whole.

**BASIC OBJECTS OF THE PROGRAM**

The five points of our program have to do with methods. It had in the beginning, and still has, but two main objectives. The first was to work out a program which would insure better medical service to the people of this region, particularly, northeastern New York State. The second was to determine whether a medical school might not legitimately, and without detriment to its primary task of providing sound undergraduate training, engage in aiding all physicians practicing within the sphere of its influence to pursue that lifelong process of education which is the mark of the good physician.

The second object is a broader aspect of the first. Together they present the ideal of a medical school accepting a definite social as well as an educational responsibility. The significance of this has increased during the past few years as society has adopted a more questioning attitude as to whether medicine will be able to solve from within the problems due to changing social and economic conditions or whether initiative would have to be taken by the State.

**ADVANTAGES OF ENVIRONMENT**

The Albany Medical College presented certain advantages for the conduct of the experiment. It has been shown to be just as natural a medical service center for twenty counties of northeastern New York as the wholesale houses of Albany are a commercial service center. This area has a population of about 1,300,000 people; half rural, half urban. Approximately one-half the number of physicians of this area are gradu-

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ates of the Albany Medical College. The Albany Hospital, which is operated jointly with the college, draws more than 4,000 of its 9,000 bed patients annually from outside the city of Albany. It is the central hospital in the college's "service area." It is the only teaching hospital in the district and, therefore, provides certain special facilities and advantages in staff not present in the fifty other hospitals distributed throughout northeastern New York.

#### METHOD

The general method of our program, as first outlined, consisted of the following points:

1. By giving preference in the selection of medical students to those whose affiliations are in its district.
2. By primarily training students for general practice, and properly fitting them at moderate cost for such work.
3. By providing its graduates and other hospital interns and physicians with data concerning opportunities and locations where doctors are needed.
4. By cooperating with graduates and other physicians in the large district served by the college, giving them an opportunity to take graduate work, so-called "refresher" study, in various departments of the medical school. The specialties are given only in relation to the work of the general practitioner and not to encourage inadequately trained specialists.
5. By suitable publicity, informing rural communities of the advantages of employing their local doctor who can care adequately for more than 90 per cent of their ills, and whose cooperation and interest is of the greatest importance in the care of the remaining 10 per cent.

#### ACTIVITIES

Our Department of Regional Extension was created to carry out this program. The activities of the department may be divided into two classes: studies and services.

A. STUDIES. The studies have been carried out to obtain the data and background of understanding necessary to intelligent and effective conduct of the services. These studies have included:

(1) *Rural Survey.* This survey provided accurate first-hand information on where and when physicians will be needed in the rural communities of the region, the economic problems involved, and the qualities and training needed. It also provided an opportunity to develop understanding and cooperative good will among practitioners of the region, which has been invaluable to the success of the whole program.

(2) *Hospital Survey.* This was a study of the facilities and services of the fifty-one hospitals in northeastern New York and nearby regions of Vermont and Massachusetts which are the focal centers of practice in the rural districts. It also provided the means for obtaining the cooperation of hospital executives and the medical profession of the hospital towns in connection with the program of the department.

(3) *School Study.* Another study has been made of the central schools in connection with their relation to medical practice, in that these schools are creating new economic and social centers in rural regions which offer certain possibilities for practice which were lacking in the past. The study also took into consideration the rural school system in relation to the source of supply of students who may become practitioners in the future.

(4) *College Study.* This is at present under way. It is not purely a study, but to a considerable extent "contact" work designed to obtain for the college increasingly better material, both as to character and training, as medical students who may become the future practitioners of the region.

#### B. SERVICES. The services of the department have to do in the main with three types of activities: placement, education, and hospitalization.

(1) *Placement.* This has to do with helping communities which need physicians to get men who are qualified to serve them well.

Our first activity in this field is direct placement. Because of the knowledge which has been spread concerning our work, we receive a number of inquiries from doctors seeking locations and from communities seeking doctors. We investigate both types of inquiry with a view to getting competent physicians into rural communities where there is a real need and a reasonable basis for success. From six to ten doctors a year are placed in this manner aside from those of our own graduates who have made definite plans in advance to enter rural practice within the district.

(2) *Experiment.* A greater problem has been what to do about the rural communities which need doctors but heretofore have not provided a reasonable economic basis for earning a living. With the cooperation of Mr. Owen D. Young we have conducted an experiment in connection with the central school which he has developed in his home village of Van Hornesville. Although a subsidy was necessary in the beginning, it has been possible to place

a doctor in this community on health work in connection with the school and, through educational methods, to build up enough practice so that there is prospect that the combination of practice, public health and school work will make the doctor self-sustaining. It is an experiment which should have many applications.

(3) *Graduate Education.* This work has been supported by the income from special endowment funds. It consists first of education for the graduate who is able to come to Albany for clinics, graduate work in general medicine and in public health or for informal instruction and, second, of educational opportunities provided for the practitioner in or near his home community. The second part of this report is devoted to a description of the graduate work.

(4) *Hospital Cooperation.* This has taken two forms, as follows:

(a) The Hospital Association of Northeastern New York: As a result of its hospital survey, the Department of Regional Extension was able to assist in forming a permanent organization of the hospitals of the region, and supplies it with regular secretarial service. The association brings the representatives of the hospitals together once a month, generally at the college, for the purpose of planning ways and means for improving their service to the people of the region.

(b) Special Hospital Problems: In cooperation with the Albany Hospital, the department also makes studies and recommendations on special problems which are brought to it by individual hospitals in the region.

There is yet an intangible aspect of the department's service which was described by Dr. Vincent before the work had been begun. He said that the college would, in the future, in substance, be saying to its graduates and others who decide to enter practice in its region that they no longer would be going out alone, even though they entered an isolated rural community, but that the college would be going with them to help them maintain contact with the advances of medical education and to aid them in every way it could. There has been a growing understanding by the practitioners of the region of this attitude and to this is due, fully as much as to the college, the value of the work which has been undertaken. With the practitioner, even more than with the undergraduate, education is something which the student acquires of his own effort rather than something that can be impressed on him.

Having presented a general picture of our program, I will now give

a more detailed account of the graduate work, which is supported chiefly by the Harkness endowment. The account will be generally descriptive.

#### GRADUATE INSTRUCTION AT THE COLLEGE

This work consists chiefly of a general course for practitioners, a public health course, clinics and special lectures, and informal instruction of individuals.

A. *Graduate Courses for Practitioners.* These started out as more or less formal lecture courses in general medicine, pediatrics and obstetrics, -supplemented by an opportunity for the visiting practitioners to accompany the staff on ward rounds. As the work goes on, it becomes apparent that the physicians can get far more out of concentrating particularly on problems in which they feel a special need for instruction, rather than from a formal review course.

Thus in a small group of general practitioners recently taking a course at the college the content was determined to a considerable degree by their own requests and questions. For instance, one morning in the course of other work, a member of the group told Dr. X that he wished he knew more about recognizing nervous disease with particular reference to the method and the interpretation of a neurological examination. Others spoke up and said that they felt a like need. The secretary of the Department of Regional Extension called Dr. Y and he arranged to demonstrate to the group, at their next meeting, a case of brain tumor and a psycho-neurotic case.

In connection with the brain tumor case, it developed that several of the group did not know how to use the ophthalmoscope and the others felt that their knowledge of its use was all too limited. They wanted to learn more. Arrangements were made to have Dr. Z spend most of Monday morning with them demonstrating the uses of the instrument. Thus, throughout the course, they are concentrating on things for which they feel or discover an urgent need. From past observation, we are confident that they would not retain from a formal review course anywhere near as much understanding, let alone experience. There is little doubt that they are returning to their practices better doctors, not so much because they were moved to buy an ophthalmoscope with which they may be able to recognize, for a long time, only the grosser abnormalities. The chief gain is that most of them have become keenly conscious of many of their shortcomings and are going back to their communities with an increased determination to learn from their own practice.

Of particular interest and importance is the personal instruction and practice in the simple tests of clinical pathology that they must use as part of the physical examination.

We have come to the conclusion that this plan of graduate work for general practitioners is the most effective and the one which we should follow. We do outline the general fields which the work will cover, but its actual detail is determined in large measure by the personal reactions of the enrolled physicians. Moreover, while helping to make better practitioners, our graduate instruction, unlike too many "postgraduate" courses, does not tend to increase the number of ill-prepared "specialists."

*B. Public Health Course.* We have found that the health officer's income available to a rural physician, sometimes makes the difference between whether or not he is financially able to remain in his community. The course for health officers appears to be one of the activities decidedly worth continuing. Conducted in cooperation with the New York State Department of Health the course represents an excellent example of how the practicing physician can pursue an extensive program of study without losing much time from his practice.

It begins virtually as a correspondence course, with reading assignments, and tests, which require about fifteen hours' work a month, with the faculty of the college and the staff of the State Department answering questions and making suggestions on the basis of the work turned in. Once a month the physicians enrolled hold a conference with their District Health Officer, followed by demonstrations in the field of various public health methods. The course ends with a week of residence work at the college and the State Laboratory which is across the street.

As in the case of the graduate work in general medicine, it is interesting to note the surprise of the practitioner to find that he is in far greater need of the work than he had suspected.

*C. Clinics and Special Lectures.* To a considerable number of the practitioners in our region, at least one of the noonday clinics is a regular part of their week's engagements—on Monday, the clinico-pathological conference; on Tuesday, graphic presentation of the basic sciences of chemistry, physiology and anatomy as applied to clinical medicine and surgery; on Wednesday, the clinic in general surgery, particularly from the standpoint of diagnosis; on Thursday, the clinics alternate between neurology and pediatrics; on Friday, general medicine, and on Saturday, the surgical specialties.

During the year, twenty-five teachers, including many of the leading medical educators of the country, appeared at the clinic. Notices of each special clinic are mailed to a list of approximately 600 physicians who have shown special interest. The practitioners of the district who are attracted to come to hear them gain not only by this experience but also by making a contact with the college which they learn to use. They are invited to

stay for luncheon, and frequently take this occasion to seek advice on their problems.

*D. Informal Instruction.* This work in the beginning was allowed largely to take its own course. If a practitioner wanted to learn how to do special technical procedures, such as those of clinical pathology, we taught him. We still do a considerable amount of such work. More and more, however, we are following a method similar to that developed in the graduate course in general medicine. We endeavor to get the doctor to set aside certain days on which he will come to the college and the hospital and then, starting from the point of his original interest, use that as the entering wedge to find what he is interested in learning and what he needs to learn.

#### GRADUATE WORK IN THE FIELD

The type of rural practitioner who comes to the Medical College to attend clinics and courses is not always the man who is in greatest need of such help. Moreover, there are many who really cannot, or conscientiously believe that they cannot, leave their practice to come from a great distance. How to reach these is the problem we must solve in endeavoring economically to help practitioners advance with the medical times.

*A. Lectures in the Field by Special Teachers.* The first method we have used has been that of arranging for lectures in the field by certain of the educators who are brought to Albany. These lectures are arranged in connection with hospitals which are members of the association which we helped to create or with county medical societies. Experience has shown us that, as a rule, we can get a far better attendance if the lecture is sponsored by either the local hospital or the county medical society.

*B. Lectures in the Field by Members of Our Own Staff.* Members of our staff are available for meetings and frequently two men go together. This serves to give variety to the program and is often helpful in starting and stimulating discussion.

*C. Consultation Service.* We are also making it a practice to provide consultation service, whenever possible, in cases where the patients pay nothing to the doctors of our region, even though it often means a considerable personal inconvenience. This has often resulted in the doctor who has called us making a practice of coming to the college whenever he can.

*D. Local Clinics.* Our field work might be criticized as being mostly lecture and very little clinic, except in the case of consultation work. In this connection may we call attention to the fact that too often in the small communities the practitioner believes that he must well nigh assume an attitude of infallibility before his colleagues. We believe, however,

that in certain of the smaller communities, we are beginning to build up, from the men who attend our clinics and courses, or who are on the staffs of hospitals in our association, groups which will be willing to organize to give local clinics. It is our intention to foster the development of local clinics by sending representatives who will take part in but not take over the clinic.

In the methods of graduate instruction in medicine, I believe that it is very important, even in the so-called "refresher" courses that physicians taking this work have patients assigned to them, if possible those in whom they are particularly interested, such as their own patients, and that with guidance and even direction of the teachers this detailed individual work is of more value than the formal clinics, clinical demonstrations and lectures, just as it is in the case of undergraduate medical students. It seems to me particularly important that those interested in graduate medical education should carefully distinguish between the various forms of so-called "refresher" study, and the training of specialists. Even some of our best medical schools advertise special courses of a few weeks or months duration, often in the surgical specialties. It is obvious that such courses may be of value as "refresher" courses to those who have already specialized in these subjects but, unless definite qualifications are set for admission to these courses, a general practitioner may attempt to become a specialist by taking this brief period of instruction.

A practitioner applied to take a course of a few weeks in pathology. On talking the matter over with him, it was found that his whole desire was to learn to make frozen sections and make rush diagnoses in the operating room. In this way he felt that he would obtain a position on the surgical staff in the shortest possible time. It was found, however, that he had no adequate knowledge of gross or microscopic pathology. Indeed, his ability in the microscopic examination of tissues was so limited that he could not even identify the tissues of the various organs. However, certificates were given to special students taking graduate courses, and the only one that could be given to him was that he had taken a course in histology, preparatory to the study of pathology.

In another instance, the general practitioner applied to take some work in the dissecting room, particularly in the anatomy of the head. He also wished to be allowed to observe in the operating room. Careful inquiry brought out the fact that he had a patient with carcinoma of the upper jaw and he wished in the course of a few days to learn enough anatomy, pathology and surgical technique to go back to the town where he was practicing and resect the upper jaw. Naturally, he was not granted permission to take this type of graduate study.

These illustrative cases emphasize the great importance of having careful qualifications for the graduate worker just as we have for the undergraduate medical student, and of distinguishing carefully between the so-called "refresher" courses for the general practitioner, and the special courses now commonly given by which in a few weeks he may attempt to take a short cut rather than spend the three or more years of systematic instruction and experience necessary for preparation in any specialty.

One reason for the unsatisfactory condition of postgraduate courses is the matter of fees. All too frequently the fees from these students are used to supplement the salaries of too poorly paid or too eager instructors. On the other hand, certificates, if not actual diplomas, are often insisted on by the graduate student. The abandonment or marked limitation of such certificates or diplomas and the replacement of fees largely by endowment is urged for postgraduate medical education. It is of interest that a recent survey of postgraduate education showed that the Albany Medical College was the only one whose graduate work depended on endowment rather than on student fees alone.

#### CONCLUSIONS

In conclusion, I wish to emphasize:

1. Careful differentiation between "refresher" courses for general practitioners and instruction for the training of specialists is urgent.
2. Basic education, training and experience of those doctors who wish to take postgraduate work should be considered carefully before admission to such studies.
3. Personal initiative of students, individually or in small groups, in the study of patients and problems, under the guidance and stimulus of teachers, should replace, to a great extent, or at least supplement, clinics, clinical lectures and demonstrations of the large lecture room and amphitheater type.
4. Certificates and diplomas for postgraduate medical instruction should be restricted or limited as far as possible in number and form.
5. Endowment and not dependence alone on fees is very important for graduate medical education.
6. It is obvious from what has been said that there are numerous close analogies between undergraduate and graduate medical education.

## The Relation of the Medical School to Extension Postgraduate Medical Instruction\*

LEROY E. PARKINS

Secretary to the Harvard Medical School, Courses for Graduates  
Boston, Massachusetts

In discussing the relation of the medical school to extension postgraduate instruction, it may be well to consider briefly the relation of the medical school to postgraduate instruction as a whole; then attempt to determine and evaluate the part the medical school may and should play in the field of extension teaching. In its literal interpretation, postgraduate means any instruction imparted to the graduate in medicine. Actually, the education of a physician is a continuous, lifelong process. This has been emphasized by the Commission on Medical Education, and is appreciated by every thoughtful physician. The medical student should be given inspiration and direction so that he will want to continue his medical education in later years, either as a resident postgraduate student, or by attending extension courses, or both. No medical school can afford to forget its great influence, especially with its own students and alumni. Every physician looks respectfully to his teachers as leaders and guides; this has been true since Hippocrates put the thought in formal phrase.

It is recognized that many physicians cannot or will not go to organized medical schools for continued study. In view of this, the Commission on Medical Education has wisely concluded that "An undertaking to provide facilities and teaching personnel for the entire profession, or even for those interested enough and able to take advantage of such educational opportunities, is one of the first magnitude." The same report states that "The largest part of the program should be directed toward taking the post-graduate work to the practicing physician in his own community or to local centers to which he can conveniently go." A splendid start has been made by the organized profession in both Canada and the United States to provide postgraduate extension courses. The benefits have been worthwhile, but the methods of organization and technique of teaching need careful study by competent educators so that better results may be obtained.

You are fully informed of the rapid changes in the qualifications and requirements for the premedical and undergraduate periods. The story of the apprentice system, handed down from Hippocrates through the ages to the modern highly organized medical school, is a bright page in the his-

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tory of education, as well as a record of high achievement by the medical profession in advancing human welfare. The outstanding fact throughout this record is a constantly recurring note of progress, a ceaseless effort to improve the status of man in his relation to the major problems of illness, and to maintain the highest state of physical and mental health.

Among the individually trained doctors there soon arose a social outlook which included all humanity. They founded medical schools and enlarged the professional horizon. Their attitude of assuming community responsibility was greatly accelerated when it was dimly understood that many diseases are contagious. The idea of prevention was added to this attitude when it was realized that an individual's disease might be of concern to the whole community. The rise of preventive medicine and the science of public health have made possible modern civilization. The medical profession has been among the pioneers of science and leaders in social progress. These well known facts are mentioned to show the flexible mind of the medical profession, and their enthusiastic response to human needs.

From the community or social viewpoint, the purpose of the medical school has been to train young men and women to become physicians in order to provide medical care for the community. In the earlier centuries, this was largely an individualistic enterprise. From the social standpoint, relatively few people profited by the best known medical knowledge of early eras. Only royalty and the very rich had access to the best in medicine. The ideal of the profession and society today is to provide all classes with competent medical service. The medical school at all times has been the source of professional leadership and inspiration. Masters of medical science and the highest type of physicians have always been numbered among the medical faculties.

In the light of present-day social and scientific knowledge, it may be appropriate to state again the function of a medical school. Essentially, it is to provide the whole community with leaders for an adequate health service personnel. This is tacitly recognized when the state charters a medical school. Faculties appreciate this and give their best in training the student. What obligation has the medical school to the medical graduate? If the school fulfills its social obligation to provide the best medical personnel, it has a direct responsibility to give such help as it can to the medical graduate. How do medical schools meet this need of effectively improving the value of the doctor to the community year by year? There is a growing feeling in the community that more should be done to bring the best in medical science to the practicing physician who serves the people.

One might compare the problem of the relation of the medical school

to the graduate in medicine, with the method of case teaching. This method is recognized and acknowledged as sound pedagogy, as well as common-sense. Another addition to teaching and medical progress is the "follow-up" of medical and surgical cases to check results of diagnosis and treatment. How enlightening this has been, and how very useful in improving treatment!

Let us suppose that the medical student is the case under consideration. What is the procedure? His history is taken; his exposures to science, literature, culture and athletics are recorded, and, perhaps, he is given a physical examination. A tentative diagnosis of studentitis is made. Then he is given a course of treatment; how well he improves! After four years of more or less accurately measured doses of potent instruction he is rated cured; final diagnosis, *Medicinae Doctoris*. Does the modern idea of follow-up have any application in this serious case of studentitis? Was it an acute attack or is it a chronic state? Was the treatment satisfactory for all time, or might there be a relapse into partial disability and ineffectiveness?

There has been a modest attempt at follow-up, but the reports are mostly voluntary and the series is not large. Actually only 4 per cent of the graduates in medicine in the United States and Canada take formal resident postgraduate courses in any year.<sup>1</sup> If a surgeon only followed up 4 per cent of his cases he would not know much about his success or the errors in diagnosis and treatment.

If the service of medical schools to the community is to be improved, it must penetrate beyond the present boundaries of educational activity. Both the profession and the laity recognize that the gap between the discovery of improvements in medical service and their application is too wide. The present annual rate of 4 per cent of physicians registered as postgraduate students in medical schools, plus the other present means of education, is not adequate to meet the genuine need of the profession and the community.

The first essential in meeting this problem is to gain the interest of the graduates themselves. Also one must appreciate the fact that the process of making the doctor study-conscious may be slow in some cases, because the stimulus and means of accomplishment may have come late. The best method of creating interest in anything is to talk directly to the person about the subject. You may have to go to him to stimulate his interest. The medical school has a direct responsibility to physicians and community which can be met in large measure by stimulating the student

1. Parkins, Leroy E., Extension Postgraduate Medical Instruction in the United States and Canada. *J.A.M.A.*, June 20, 1934, 102, pp. 2155-2159.

and the physician to be interested in continued education through extension courses. The medical school is the acknowledged source of leadership, and it is to be expected that experiments in medical education and the stimulus for postgraduate instruction will emanate from such centers. In almost all cases the stimulus for extension teaching has originated in medical schools or in public health departments, while the faculties of medical schools have provided the majority of the teaching personnel.

Should the medical school actually maintain and direct extension post-graduate courses? The answer to this will vary somewhat with the conditions in the community. The relation of the medical schools to its graduates and the community is real, but the actual responsibility for community medical service rests primarily with organized medicine. The rôle of the medical school in postgraduate extension teaching should be largely inspirational and to stimulate groups to study activity. Personnel and facilities may be offered and should be used. It is well to recognize that state and national groups have leadership, organization and means of helping themselves. After all, true education is self-administered.

The rise of interest in extension postgraduate instruction has been remarkable. It was first started by the state of North Carolina in 1918. The stimulus came from Dr. Rankin,<sup>2</sup> Director of Public Health in that state. The profession at once saw the value of the plan, and the idea has spread until at the present time twenty-two states have or have had organized extension courses. Canada has had postgraduate extension courses on a national scale. One hundred twenty thousand physicians are resident in territory where extension courses are or have been offered. In view of this record it is easy to understand that the process of developing interest in postgraduate medical instruction is surely gaining ground. Once the way is made clear, there is no question of the interest of the profession as a whole in improving their professional ability.

The administration of medical extension courses has been carried on in various ways. In Canada, the Canadian Medical Association has complete charge of the organization and administration; medical schools only assist by supplying instructors. In Connecticut, Iowa, Minnesota, Ohio, Virginia and Washington, there is active cooperation of both medical schools and the state medical societies in organizing courses. The extension departments of the state universities of Oklahoma, Wisconsin and North Carolina, carry the administrative responsibility of similar extension courses, and the state medical society cooperates. In New Hampshire, extension courses were given only one year, and the details of organization were handled by the State Health Department. In Georgia, extension

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2. Adams, F. D.: The North Carolina Extension Plan, *J.A.M.A.* 80:1714-1717 (June 9) 1923.

courses are the joint responsibility of the State Health Department, the medical schools, and the State Medical Society. In New Jersey and Florida, the administration of medical extension courses is by a non-medical college in each state. In Illinois, Massachusetts, Missouri and New York state, the state medical societies have taken full responsibility for organization and administration of extension postgraduate instruction. In each of these states, medical schools have given valuable assistance, but they have not assumed direct responsibility for the organization.

The latest state medical society to organize extension postgraduate instruction is Massachusetts. Dr. Frank Ober, assistant dean in charge of Courses for Graduates, of the Harvard Medical School, and the writer, have been actively associated with this undertaking but we have participated only as members of the Medical Society. Likewise, the deans of Boston University School of Medicine and Tufts College Medical School are members of the general committee on postgraduate instruction of the Medical Society. This effort was started in 1932 when the Massachusetts Medical Society decided to provide extension postgraduate instruction for its membership. At this time, the Harvard Medical School, appreciating that it is the proper function of organized medicine to provide such instruction for its membership, abandoned its extension courses in Massachusetts. Such courses had been given annually for several years. The Massachusetts Medical Society organized an extension faculty of 170 instructors and enrolled more than one thousand physicians the first year; this is 20 per cent of the total membership. The attendance at the courses offered by the Medical Society was much larger than during any single year when courses were conducted by the Harvard Medical School. The success of this project was largely made possible by the moral support and splendid cooperation of the deans and faculties of Boston University, Harvard, and Tufts College medical schools. A few nonmedical school instructors gave splendid service too.

The interest in postgraduate instruction must be widened. National and state groups, through their constituent divisions, should assume the responsibility of taking postgraduate instruction to their membership. However, medical schools may have to stimulate interest in, and even start such courses. It is the belief of many authorities that ultimately extension postgraduate instruction should primarily be the problem of organized medicine, because to be effective, it should be mass education. Organized medicine is already prepared to handle this field of continued postgraduate instruction. The leadership and cooperation of the medical schools are greatly needed to insure the success of this important social and educational project.

Resident courses in postgraduate instruction should be made available

at less expense, and an adequate salary should be paid the faculty. Post-graduate medical instruction should be removed from the proprietary field and endowed, as are the undergraduate years and other departments of higher education. It is apparent that the rapid development of wide interest in extension postgraduate instruction in the past sixteen years, means that the medical schools should look ahead and anticipate a greater interest in resident postgraduate courses in the near future.

## Current Trends in Graduate Medical Education\*

W. C. RAPPLER

Dean, Columbia University College of Physicians and Surgeons

Director, New York Postgraduate Medical School  
New York City

An adequate program of medical care for a community must provide a wide variety of highly skilled professional services which the individuals of the community need. Essential to any such program are a sufficient number of competent physicians who are familiar with current knowledge regarding the more general aspects of the diagnosis, treatment and prevention of disease and disability, and a proper proportion of specialists who, in addition to a broad basic preparation in medicine, are qualified by graduate training, technical skill and experience to perform the specialized services which some patients require. The need for these two groups of physicians in any adequate program of medical care for a community and the necessity of providing educational programs for them indicate the two major phases of graduate medical training. The educational problems of these two groups are different and require methods adapted to the professional needs of each. The necessarily close relationships between the functions and responsibilities, the training, and the methods of continuing the professional competence of these two groups of physicians have not been widely appreciated until recently.

The elevation of the standards of medical education in the United States during the last twenty-five years has been phenomenal. During this period the number of medical schools has been reduced from about 160, many of which were proprietary, commercial institutions, to sixty-seven, practically all of which are now affiliated with universities and maintain high standards. Practically, the entire effort has been concentrated on undergraduate medical training, the quality of which now compares favorably with that of any country.

Although the number of medical schools has been greatly reduced, the ratio of physicians to the population is still much higher than in the leading countries of Europe. The rate of increase in the profession continues greater than the rate of increase in the population. The great need of the country is for better, not more, physicians and for opportunities by which those in practice and those who are qualified to specialize may be able to prepare themselves adequately for their responsibilities to the public. A widespread and permanent improvement in the quality of medical service

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can only be secured when graduate medical education has been developed to the level of excellence of the better undergraduate courses.

Some have believed that the elevation of undergraduate medical training to a high level would obviate the necessity of providing special facilities and programs for keeping physicians abreast of new developments and would insure that the public receive the best of care. It is generally appreciated, however, that even at best the undergraduate training can deal only with the elementary and introductory principles of medicine. The mass of scientific medical knowledge and experience is far too great to be covered in detail in any medical course. Largely because of the very magnitude of this mass of knowledge and experience, individuals are able to master only a limited portion of the subject. A division of labor and of responsibility is inevitable. Furthermore, knowledge is not static. Each year many new discoveries are brought forward, some of which occasionally modify the concepts of disease, treatment and prevention.

It is also true that many physicians now in practice received their education before some of the recent contributions of the medical sciences and of physics and chemistry were made. Others were trained in schools in which the value of these contributions was not fully emphasized. The instruction in some institutions is still inadequate in certain fields. Many physicians continue to practice without being able to give their patients the full benefit of present knowledge, and often they are without opportunity or incentive to secure the necessary additional training which they should have.

In order that a physician may be able to advise his patient or a family when and what special examinations or treatments are necessary, and who is qualified to render these services, he must be familiar with sound, up-to-date knowledge not only of the methods of diagnosis, treatment and prevention, but also with the indications, value and limitations of such procedures. Keeping physicians aware of and competent to use the best current knowledge is one of the most important features of a satisfactory medical service for the country. Every physician must continue to be a student throughout his professional life if he expects to be successful scientifically.

The efforts to keep physicians in practice abreast of current knowledge are of several varieties, designed to meet the needs of practitioners and often arranged to do so with a minimum of disturbance in their daily work. A number of plans have been developed through the various forms of extension education to take the teaching programs to the physician in his own community. Evidently one of the earliest and most successful plans was that inaugurated by the Extension Division of the University of North Carolina in 1916. The circuit or itinerary courses in that state and

in Kansas, as examples, differ only in details from those developed in Wisconsin and in Minnesota. The program in Michigan is developed by congressional districts for convenience of administration. Ohio, Missouri, West Virginia, Colorado, Iowa, Oklahoma, Connecticut, New York and other states have programs which vary somewhat in their details. Dr. Parkins has just described the excellent program in Massachusetts. In most instances, the plans have been worked out jointly by the state medical societies, the universities, and, in some instances, with the cooperation of the state boards of health.

In contrast with the various methods of extramural teaching, intramural instruction in hospital centers for physicians in the locality has been developed in some of the large cities. In many of the courses of this type, the physicians enroll in and attend half day or full day sessions of intensive instruction once or twice a week for varying periods. In other instances, organized courses in several departments are arranged so that the physician from the neighborhood or from a distance may spend his entire time for a week or for a number of weeks in the hospital, clinics and laboratories. It should be remarked that many of these programs for the continued education of physicians can be wholly or largely self-supporting.

The other major phase of graduate education, viz., the training and identification of specialists, has not been dealt with adequately. The extent to which financial support, for example, has been concentrated on the undergraduate training is indicated by the total annual budget of more than eleven million dollars for the medical schools of the United States, of which about one-third is covered by student fees. Close to eight million dollars per year is contributed from endowments, taxation, and sources other than tuition. The amount available for graduate medical education from similar sources is less than 3 per cent of that total. If graduate instruction is to be placed on a proper educational level, more financial support for university programs in this field will have to be secured.

No phase of medical service and education is more important at present, both from the standpoint of the public and of the profession, than that of the proper training of specialists. The public is confused by the large number of physicians who claim to be specialists, whereas, in reality, there is a shortage of properly trained experts to meet the medical needs of the country. Present facilities and opportunities are quite inadequate for the training of a sufficient number of properly qualified specialists, although the number of hospitals in which such training may be given is sufficient if educational supervision and direction can be secured. Only a few institutions now provide what may be regarded as a thorough preparation for a specialty.

In most of the older countries of Europe the public is protected by

various devices which insure that those who claim to be qualified in the limited fields of practice are in fact prepared by training and experience to perform the procedures which they propose to carry out. Appointments to hospital staffs in the several specialties in Great Britain are usually restricted to those who are members of the Royal Societies, those possessing advanced university degrees, or those designated by appropriate bodies as being qualified in the respective fields. Similar identification is necessary in other European countries. In the United States, societies of specialists exist and most of them maintain high standards for admission.

Recently, the different groups of specialists have organized national boards for the purposes of determining qualifications for admission to their examinations, of conducting examinations, of issuing certificates of competency, and of publishing lists of qualified specialists. Within the last year an Advisory Board for Medical Specialties, in conjunction with the program of the American Medical Association, has been organized to assist in establishing uniformly high standards and in coordinating the activities of these boards. In addition to the specialty boards, membership on the Advisory Board includes such organizations as the Federation of State Medical Boards, the Association of American Medical Colleges, the National Board of Medical Examiners, and the American Hospital Association, which insures a broad public and educational emphasis to the program. As a result of these efforts, a national Register of Specialists will probably be created, admission to which will be based on a training and experience in each limited field of practice which may be regarded as sufficient to insure proper protection of the patient and the public.

There is general agreement that the proper preparation of a specialist should include three major phases of training. The first is a sound basic medical education, including a hospital internship, which is now regarded as a part of that preparation. The second is a thorough advanced training in the medical sciences concerned particularly with the limited field of clinical medicine in question. The scientific courses in even the best of the medical schools are designed to be introductory, elementary and general in character. He who wishes to qualify in a limited field of medicine as a specialist should go far beyond that elementary training. The third phase is a long, active clinical experience with graded responsibilities under the supervision of experts in the field of medicine elected which will lead ultimately to thorough competency in this special field of practice. These three phases can best be correlated under university direction, supplemented by the use of a number of special services and hospitals in order to provide a sufficient number and variety of clinical problems to prepare the physician fully to meet the requirements of a real specialist.

Several of the universities have started programs which aim to pro-

vide the type of training indicated. There are numerous indications that we shall see developments in the several fields of graduate education which may be as far reaching and vital as those which we have witnessed in so-called undergraduate medical training during the last two or three decades. It is important that in such programs only a broad definition of requirements should be made in order to permit flexibility in the training for the various fields and the adaptation of that training to the needs and preparation of each student.

The requirements for the advanced training should include:

1. A period of study after the internship of not less than three years in the University and in hospitals, clinics and laboratories recognized as competent to provide a satisfactory graduate education.
2. Intensive graduate training in the basic medical sciences of anatomy, embryology, physiology, biological chemistry, pharmacology, pathology, bacteriology, and in other fields of science which are necessary to the proper understanding of the disorders and methods of treatment involved in the specialty in question. Residents on the various special services of hospitals recognized for the purpose of this program should spend a portion of their time in the basic sciences.
3. An active experience during the three year period of not less than eighteen months in the hospital, clinics, and diagnostic laboratories of the specialty elected.
4. Written, oral and practical examinations in the basic sciences of the specialty as well as in the clinical, laboratory and public health fields to which the specialty is related.

Hospital and clinic facilities can be expanded through affiliations when more resources are needed and opportunities of high quality present themselves. The extensive hospital facilities of high quality found in every section of the country offer a unique opportunity and responsibility in the field of graduate education, which at the moment is the weak link in the medical program of the country.

It is of importance that the graduate program should be closely articulated with that of the training of medical students and research in the various fields of medicine. The sequence from premedical education to retirement from practice should be regarded broadly as a single problem. An artificial segregation of the medical course, the internship, the training of the specialist and the continued education of the practitioner has created serious gaps in the education of physicians which should and can be avoided. Universities have a great opportunity to participate in, to correlate, and to direct the graduate program which, if well done, promises to be a contribution of the first magnitude to public as well as to professional welfare.

## Experience with a Postgraduate Course for Practitioners: Evaluation of Results\*

JOHN B. YOUMANS

Associate Professor of Medicine and Director of Postgraduate Instruction  
Vanderbilt University School of Medicine  
Nashville, Tennessee

For the past five years Vanderbilt University Medical School has offered a postgraduate course for certain men who have been given fellowships by the Commonwealth Fund. This course is designed for general practitioners in the small towns and rural communities of the state, and its purpose is to elevate, as far as possible, the practices of these men to a satisfactory modern day level. Physicians are appointed to the fellowships by the Commonwealth Fund with the approval of the school, are paid a monthly allowance and are reimbursed for certain expenses. Each course is of four months duration, during which time the students are in residence. Ordinarily two courses are given each year. The number in each course is limited to ten, and each fellow receives a great deal of individual attention, though each course is given as a unit to the entire group. It is as practical as possible and is planned to suit the needs of the average general practitioner in this region with due regard to the available facilities and limitations of such a practice. To a large extent the instruction is of a type similar to that given to undergraduates, except that it is more intensive.

Each course is divided into five periods. The first period of four weeks is devoted to physical diagnosis and clinical laboratory methods. Physical diagnosis occupies the mornings and consists, for the most part, of practical work with patients in the outpatient department, beginning with history taking and the fundamentals of physical diagnosis, followed by the exhibition of patients illustrating the common important abnormal physical findings. Clinical laboratory methods are taught in the afternoon and the work corresponds closely in scope and quality to the courses given to undergraduates. The courses in both physical diagnosis and clinical laboratory methods are devised not only to review these important subjects and teach new methods but to serve as a preparation for the subsequent teaching, the effectiveness of which depends on an adequate knowledge of these subjects. During this period also, opportunity is given to review the preclinical sciences and to present as much as is possible of the

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advances in them which are practical and necessary to a practitioner of modern medicine.

Four subsequent periods of three weeks each are devoted to the major fields of medicine, surgery, pediatrics and obstetrics, respectively. To a large extent, the work in these subjects consists of the actual examination of patients, the performance of laboratory work, ward rounds, conferences and informal lectures. Use is made of both the wards and the outpatient departments. During the medical and surgical periods a certain amount of instruction is given in the specialties, as far as they concern general practice. A limited amount of election only is permitted. Gynecology is given with obstetrics.

In addition to the above, there is a required course in preventive and public health medicine as it relates to the general practitioner. A clinical pathologic conference is held weekly throughout the four months and nearly all autopsies are attended. Free use is made of the library and other opportunities for learning, such as lectures, meetings, etc., all of which are open to the students. In a general way, the course resembles the usual undergraduate course in miniature, the first period corresponding to the two preclinical years and the four subsequent periods to the clinical years.

It was recognized from the beginning that the success of this rather new departure in postgraduate teaching could be evaluated properly only by a follow-up study which would attempt to determine the degree of improvement in the practice of the men who had taken the course. Such a study would help in deciding whether the results justified the rather large expense involved in this type of postgraduate teaching. It would also assist in detecting the weak and strong features of the course and in making such changes and rearrangements as would improve subsequent courses. This paper is the result of such a study of the men in the first five courses, that is, those who had taken the course up to the summer of 1933.

#### METHODS

It was realized that any worth while follow-up study required an actual observation of the practice of each physician in his own environment. Only in this way could the quality of his practice and the amount of improvement be determined. This was particularly important because of individual variations in ability and other modifying factors which make the degree of improvement an entirely individual and relative matter. To determine the improvement it was necessary to establish some standard of practice with which his present as well as previous practice could be compared. The difficulties in establishing such a standard are many, but the principal one is that of measuring certain intangible qualities, such as the desire to practice better medicine, which are of great importance and were

very favorably influenced by taking the course. It was decided finally that the object of the study could best be met by a system of scoring in which numerical values could be assigned to the various phases of practice on the basis of a theoretical standard and in addition a note in which an appraisal of the results obtained in each individual case could be recorded and the intangibles referred to above could be evaluated. The difficulties and inaccuracies of a method in which the quality of practice is expressed by a numerical index are appreciated but it is believed that properly done such a method, with the added comment, will give fairly satisfactory evidence of the result of this teaching.

To carry out this plan, a theoretical standard practice was defined (Appendices I and III) due allowance being made for the training, opportunities, facilities, needs and limitations of this type of practice and physician. A rather high standard has purposely been set. A score sheet was devised (Appendix II) in which values were assigned to the various phases of practice. Each of the men was then visited in his community by the writer, approximately one half day being devoted to each one. No notice of the visit was given in advance. His patients were seen with him. He was questioned in regard to histories, examinations, laboratory procedures and treatment. His knowledge of medicine in all its phases was tested, with particular reference to patients under his care. The office, supplies and equipment were inspected, including laboratory facilities and their use; the size and character of the library were noted and an estimate was made of how much it was used. Whenever possible, discreet inquiries were made from outside sources as to the quality of his work, with particular reference to his activities in public health. With these data he was graded according to the system described. To this there was added a note describing the character of the community, the hospital facilities and local aids and drawbacks to practice. The note also included a summary of his status and an estimate of the results of the teaching, with particular reference to the intangible factors mentioned above.

In order to compare in each individual case the quality of the practice after taking the course with that before taking the course, it was necessary to grade the previous practice. Unfortunately, no comparable investigation had been made prior to taking the course. It was necessary to depend, therefore, on information derived from a questionnaire which had been sent before the course was taken, on an estimate of their ability made during the first few days of their course and on information respecting their previous practice obtained at the home interview. This is the least satisfactory feature of the study but is, perhaps, better than might be expected because the writer, who visited them, was in charge of the course

of instruction, taught them personally during the first four weeks and was fairly familiar with their ability and habits of practice before they took the course.

#### RESULTS

Certain of the results are shown in the following tables and the individual comments are included at the end of the paper. At the time this study was made five courses had been given to a total of forty students. Of this number six were not visited and four were visited but not graded

TABLE 1. GRADE BEFORE TAKING COURSE, AFTER TAKING COURSE, DIFFERENCE, AND PER CENT OF IMPROVEMENT BASED ON INITIAL GRADE.

ARRANGED IN ORDER OF LOWEST TO HIGHEST STANDING AFTER TAKING COURSE.

Number	Grade Before Course	Grade After Course	Difference	Improvement	
					Per cent
19	29	37	8		28
30	26	43	17		65
23	49	54	5		10
13	44	56	12		27
31	40	57	17		43
8	26	58	32		123
21	21	58	37		176
16	37	59	22		59
10	46	59	13		28
34	39	60	21		54
15	53	61	8		15
33	51	63	12		24
25	46	67	21		46
18	59	68	9		15
6	44	68	24		55
7	54	70	16		30
1	60	73	13		22
32	51	74	23		45
36	52	74	22		42
11	57	76	19		33
9	59	76	17		29
35	56	79	23		41
37	64	82	18		28
22	79	84	5		6
5	74	85	11		15
38	60	85	25		42
41	67	87	20		30
4	79	87	8		10
27	80	89	9		11
12	78	97	19		23

for various reasons. There remain thirty men for whom the complete data are available. This group includes six of eight in the first group, eight of ten in the second, six of ten in the third, five of six in the fourth and five of six in the fifth group.

Table 1 gives the numerical grade of each student before taking the course, his grade after the course was taken, the difference and the per

cent of improvement based on the grade before taking the course. As might be expected, some improvement was shown by all, ranging from 5 to 37 points or an improvement of from 6 to 176 per cent. It should be

TABLE 2. COMPARISON OF RESULTS IN EACH COURSE.

Course	Grade Before Course	Grade After Course	Improvement on Basis of Grade Before Course
			Per cent
First Course			
1.	60	73	22
5.	74	85	15
8.	26	58	123
7.	54	70	30
6.	44	68	55
4.	79	87	10
Average	56	74	43
Second Course			
10.	46	59	28
13.	44	56	27
16.	37	59	59
18.	59	68	15
12.	78	97	23
11.	57	76	53
9.	59	76	29
15.	53	61	15
Average	54	69	29
Third Course			
27.	80	89	11
25.	46	67	46
23.	49	54	10
19.	29	37	28
22.	79	84	6
21.	21	58	176
Average	51	65	46
Fourth Course			
32.	51	74	45
33.	51	63	24
31.	40	57	43
30.	26	43	65
Average	42	59	44
Fifth Course			
37.	64	82	28
41.	67	87	30
36.	52	74	42
38.	60	85	42
35.	56	79	41
Average	60	81	36

noted that the degree of improvement is entirely a relative and individual matter. In general, men with a low initial grade showed a much higher

percentage of improvement than did those whose initial grades were high. However, not all with low initial grades showed a large per cent of improvement and some with rather high initial grades showed a considerable degree of improvement.

In Table 2, the average and individual grades for each of the five courses are given. This comparison is made because of the various changes which have been made in the course from time to time and because of the difference in time which had elapsed since the courses were completed. It is of little value because of the rather large individual variations and the fact that the numbers are so small that the inclusion of an unusually low or high grade affects the average unduly. For example, the high average in the third group is due to the inclusion of the individual with the greatest percent improvement of the entire number. It is of some interest that no consistent relationship is found between the average improvement of the different classes and the length of time elapsed since the courses were completed.

In Table 3, the results are compared on the basis of the age of the student. As would be expected, the two youngest age groups (below 45) showed by far the highest average initial and final grades but the lowest percent of improvement because of the high initial grade. After 45, there

TABLE 3. COMPARISON OF RESULTS ON BASIS OF AGE.

Age Group	Number	Average	Average	Average of
		Initial Grade	Final Grade	Individual Improvement
35-39*	3	70	84	26
40-44	4	70	83	21
45-49	6	55	70	30
50-54	9	44	68	67
55-59**	8	53	67	29

\*Includes one man aged 29.

\*\*Includes one man aged 60.

is a very sharp drop in the average grade before taking the course as well as a failure to show as high an average grade after the course. The percent of improvement is larger, however. The age group 50-54 has definitely a lower average initial grade than the 45-49 group, but made almost as high an average grade after taking the course and a much greater improvement. The oldest age group (55-59) showed an average initial and final grade nearly equal to the age group 45-49 and an average initial grade higher than that of the 50-54 group. This is probably the result of the fact that their older age alone made the selection of these men more critical. The degree of improvement, however, is less than that of the 50-55 group.

which suggests that though the latter group contained more poor men they were not so old but that they were capable of relatively great improvement.

In Table 4, comparison is made of the grades and degree of improvement on the basis of the time elapsed since graduation. When the time is

TABLE 4. COMPARISON OF RESULTS ON BASIS OF TIME ELAPSED SINCE GRADUATION.

Years since Graduation	Number	Average Grade Before Course	Average Grade After Course	Average of Individual Improvement	Per cent
10-19*	8	65	75		23
20-29	11	50	69		45
30-39**	11	47	64		45

\*Includes one man graduated 4 years.

\*\*Includes one man graduated 42 years.

arranged in ten-year periods, a progressive lowering of the average grades before and after taking the course is apparent though the percent of improvement is greater in the older men. However, the difference between those graduated from twenty to thirty and thirty to forty years, respectively, is slight. When arranged on the basis of five-year periods the relationship was found to be less constant, although superiority of the younger group (less than twenty-five years since graduation) was very clear.

Table 5 gives the individual and average grades and percent of improvement on the basis of the type of school at which their medical education was secured. The division of schools into "poorer" and "better" is

TABLE 5. COMPARISON OF RESULTS BASED ON GRADUATION FROM "BETTER" AND "POORER" MEDICAL SCHOOLS.

Schools	Number	Average Grade Before Course	Average Grade After Course	Average of Individual Improvement	Per cent
"Poorer"	17	46	65		48
"Better"	13	61	76		27

entirely arbitrary and is based on various sources of information, allowances being made for the period at which the schooling was had. It will be observed that the graduates of the better schools show a higher average grade before and after the course. Undoubtedly these results are affected by the age factors, the group from the better schools being composed mostly of younger men, while those from the poorer schools are, as a rule, older. The latter are of such an age that the period of their education coincided

with the mushroom growth of low grade medical schools in this country. All but four of the men graduated from what might be termed local medical schools.

In Table 6 the relationship between internship and postgraduate study and the grades before and after taking the course is shown. Not much importance can be attached to certain of the findings as some of the groups are too small to be significant. There are only three men who had an internship without a postgraduate course, except the present one, and only four men who had had both an internship and postgraduate work.

TABLE 6. RELATION OF INTERNSHIP AND PREVIOUS POSTGRADUATE STUDY TO GRADES BEFORE AND AFTER TAKING PRESENT COURSE.

	Number	Average Grade Before Course	Average Grade After Course	Average of Individual Improvements	Per cent
Internship .....	6	63	81	31	
No internship .....	23	47	63	41	
Postgraduate study .....	17	47	64	45	
No postgraduate study .....	13	60	77	31	
Internship—no postgraduate study.....	3	61	83	35	
Postgraduate study—no internship.....	13	42	59	50	
Both internship and postgraduate study	4	63	81	31	
Neither internship nor postgraduate study .....	10	60	75	30	

Furthermore, the picture is colored by other factors. Thus, only six of the thirty had an internship, and five of those six belonged to the younger group, an important factor in itself. A rather surprising finding is that the group which took no postgraduate study had a higher grade both before and after taking the course than did those who had had other postgraduate work. A possible explanation is that many whose preparation was the poorest, realizing their deficiencies, attempted to remedy them by work after graduation. This explanation is supported by the fact that the lowest grades, both before and after taking the course, are found in the group who had no internship but had had some postgraduate work. Age, here, is not a factor as the group is equally divided between those over and those under 50 years of age. The low grades of many of those who had postgraduate work may or may not reflect the suitableness of such postgraduate courses as were taken.

#### DISCUSSION

Certain general conclusions with respect to the type of course and kind of teaching best adapted for the purpose outlined above, based on the experience gained in giving these courses, may not be amiss. The first is

the decided superiority of practical over didactic teaching. It was very apparent that the practical work, which dealt with patients in the wards and in the outpatient department or with various technical procedures of diagnosis and treatment, was the most valuable part of the teaching. An interesting example of this is the course in physical diagnosis and laboratory methods. Doubt was expressed in the beginning as to the value of this work and it was thought that the attitude of the students toward work which might be considered elementary or unsuitable to the man in general practice might be unfavorable. On the contrary, this part of the course was highly popular and has proven very valuable not only in itself and as an essential preparation for the subsequent work, but also as an aid in developing the correct attitude of mind toward modern methods of diagnosis and treatment.

It should not be inferred that didactic teaching has no place in this type of teaching. It has definite value but its use should be restricted to an amount necessary to correlate properly, guide and develop the subject as provided in practical exercises. The closer the approach of the student to the patient, the nearer the instruction resembles that of modern undergraduate teaching, the better will be the results of this kind of post-graduate teaching.

In general, this type of postgraduate course is best conducted with few instructors. A large number of instructors in any course was found to lead to poor correlation of the subject, reduplication of effort, confusion in the mind of the student and a loss of interest. It might be urged that a large staff is necessary to give proper instruction in certain special fields in which various members of the staff are particularly trained. This would be true if the aim of the course was to give highly specialized instruction in special fields of medicine. Such is not the case, however, and instruction should be given not by those whose field is a small part of the whole but by men dealing with the broad aspects of medicine, surgery, pediatrics and obstetrics.

In intensive courses of this kind reliance cannot be placed on the ordinary haphazard occurrence in the usual hospital and outpatient departments of patients with various types of disease, a system which may be sufficient in the longer periods of undergraduate teaching. The relatively short period of time available to each subject makes it necessary to concentrate and mobilize the clinical material if it is to be used to the greatest advantage. Lists of patients illustrating the different manifestations and types of various diseases should be prepared from the clinical records. A record of patients especially suitable for teaching should be kept. These should be classified properly and correlated, and arrangements made for

these patients to attend the hospital or outpatient department in such a way that the clinical material will serve to illustrate and complement in proper order and sequence the didactic instruction. This plan will succeed only if special attention is paid to the necessary details. It is, of course, possible only for the more chronic diseases and the plan of teaching must be sufficiently flexible to allow the use of the clinical material illustrating acute disease whenever the opportunity arises.

With respect to the individual instructor it is important to remember that postgraduate teaching of the kind described here is, in general, more difficult than undergraduate teaching. Almost as much must be untaught as is taught, and that with tact and patience to avoid antagonizing the student. The teaching must be done without a background of knowledge of the fundamental sciences on the part of the postgraduate student which the undergraduate student possesses. Yet, if the teaching is to be successful, the instructor must in some way make up for this deficiency. He also must possess not only the knowledge, but a sympathetic appreciation, of the problems and limitations of general practice. On the other hand, his teaching must overcome many of these obstacles or no progress will be made. It is thus apparent that in addition to a knowledge of his subject the instructor must have teaching ability of a high order. Clinical experience and professional reputation are not alone sufficient; in addition he must have ability to arouse the interest of those who have lost their enthusiasm, patience with minds which have become slow with the rust of disuse, tact with the timid, ashamed to expose their ignorance, and with those whose thinking has been misguided as the result of a lack of professional contact and a limited experience. It was a gratifying experience to find that younger men, provided they possessed these qualities and a requisite knowledge of the subject, were well received.

Any attempt to draw hard and fast conclusions from these data must be made with extreme caution, both because the numbers involved make statistical treatment of the data unreliable and because the multiplicity of the factors influencing the results limits the number and scope of general conclusions. It is because of the highly individual nature of the results that a better evaluation of the effect of this teaching is, perhaps, obtained from the individual summaries than from the average results and mathematical expressions. Furthermore, the conclusions which might be reached will depend to a considerable extent on each individual's interpretation of values. Thus, one person might feel than a 20 per cent improvement in the practice of a poor physician was of greater benefit than a similar degree

of improvement in the case of a good practitioner, or that time and money were poorly spent on a physician who was so good to start with that an improvement of from 10 to 15 per cent was all that could be expected. On the contrary, some might hold the view that a physician whose practice could not be improved to 75 per cent of a satisfactory standard was not worth helping. To illustrate the complexities of judgment other modifying factors might be mentioned. Thus, the improvement in the practice of a physician isolated in a community sparsely served by physicians, to 50 per cent of satisfactory, might be thought of greater general good than a similar degree of improvement in a physician located in a territory which was better supplied with medical services.

Adopting a somewhat middle ground, it would seem reasonable to conclude that the results were successful and worth while in those individuals whose improvement amounted to 25 per cent or more when the initial grade was under 50, and to 15 per cent or more when the initial grade was above 50. On such a basis, the results are found to be satisfactory in 26 of the 30 students, or 87 per cent. It should be emphasized that an unsatisfactory result in this connection does not necessarily mean a failure to receive a satisfactory grade. In fact, three of the four students classified as failures were among the best in the group, with high scores on both gradings. The failure in these three cases means that the kind of course given was not well adapted to their needs, and, therefore, was not worth the time and expense involved. In the case of the one student with a low initial grade, either the man selected was incapable of sufficient improvement or the course was poorly adapted to his needs and ability. However, if the latter is the explanation, the course was unsatisfactory for entirely different reasons than in the case of the three better men.

From a composite point of view of the statistical data it would appear that the greatest return from all points of view would be obtained by giving the course to men from 45 to 55 years of age, who have been graduated from 20 to 30 years, whose preparation had been only fair, usually did not include an internship, provided that men were selected who were active mentally, aware of their own deficiencies, honestly anxious to improve, capable of learning, willing to work and in reasonably good physical health. From personal experience it is the conclusion of the writer, most of the instructors and many of the students, that the most satisfactory results would be obtained with men in the younger age group, the lower forties for example. Nevertheless, it must be recognized that these general conclusions will fail to take into account many individual exceptions in which the results would fully justify the time and money expended.

INDIVIDUAL SUMMARIES<sup>1</sup>

No. 19.—One of the poorest men in the group, who has shown little improvement and might be considered a failure. His equipment is quite good, but his diagnostic work is poor, and his examinations are sketchy. He appears to have learned little about the interpretation of what he does find, and has learned almost nothing about modern concepts of disease processes. His treatment is not only poor in a negative sense but sometimes positively so. He uses the laboratory almost none, reads but little, and keeps no records. It is doubtful whether he has any better appreciation of public health activities.

No. 30.—He has improved some in his knowledge of disease, but this is a relatively static thing. He has failed to apply it in his practice, except as it assists him with little or no exertion on his part. No records are kept. He has a better understanding of the aims of public and preventive medicine.

No. 23.—He has shown little improvement as a result of the course. The best that can be said is that he is energetic and interested. However, he probably was so before taking the course, and since the energy operates on the basis of a rather superficial examination, poorly interpreted, without the benefit of sufficient laboratory aid and is expressed mainly in uncritical enthusiasm for treatment, these attributes will not compensate for the disappointing lack of improvement. He keeps few or no records.

No. 13.—Since taking the course he has improved his laboratory and equipment, his physical examinations, and he has a better knowledge of disease, but he has failed to a considerable degree to translate this knowledge into action. As a result, his practice is still inadequate with respect to diagnosis, with the consequent effect on treatment. Nevertheless, it is better, particularly in minor surgery, physiotherapy, and in the more obvious medical conditions. He has also improved in preventive medicine, particularly in respect to prenatal care.

No. 31.—This man has improved more than his score indicates. His examination is much more thorough, his interpretations are greatly improved and his therapy much more critical. The use of the laboratory is better. He has made more suitable arrangements for the care of his patients in the hospital and makes use of a nurse for assistance in obstetrics and in the laboratory. No records are kept. He has a better insight into the aims and methods of public health measures, but feels that his opportunities have been lessened to some extent by the activities of public health agencies. Reduced income has interfered with his plans to improve his equipment, etc. Lack of evidence of reading and study suggest that he may not hold improvement as he should but he has been a fairly frequent attendant at the meetings of the Vanderbilt Medical Society since completing his course.

No. 8.—Although he made relatively a very great improvement he has failed to put into practice what he learned to as great a degree as I expected, and he is therefore a disappointment. His practice shows a little too much superficiality, and he does not study, use physical examination, or the laboratory as much as he should or could. He has failed to keep records, to read, and will probably tend to slip back gradually to his previous level. However, he is interested in nose and throat work and obstetrics and does better in these fields. He has improved

<sup>1</sup>. Only a brief summary of the note made at the time of the visit is given.

his prenatal and obstetric service considerably, and by eliminating charges for prenatal visits has done much to encourage proper prenatal care. He does not take obstetric cases unless they will engage him in advance and follow through. There has been no particular improvement in preventive medicine and public health, except in prenatal work. Unfortunately, the special course in anesthesia, which he was given has proved useless because the hospital has not bought the equipment.

No. 21.—A man with a poor foundation whose relative improvement has been one of the greatest of the group. Since taking the course he has moved to the outskirts of Nashville where he practices successfully, greatly improved in diagnosis and concept of disease and use of modern treatment. Perhaps the greatest improvement has been a recognition of his own inadequacies and the use of help from others. A concrete example of improvement is the much greater use of the Wassermann test and the adequate treatment of a number of syphilitics. His prenatal care is much better. He keeps no records and has probably made little use of his teaching in public health and preventive medicine.

No. 16.—Although his final grade was not very high, he shows relatively a great improvement; he is undoubtedly more thorough in history and examination, understands disease better and is more critical in his treatment. He uses the laboratory more. Since taking the course he has given transfusions in the home, used blood intramuscularly for purpura, and employs cauterization of the cervix to advantage. He has not added much to his equipment, is rather untidy, keeps no records, does not read much, and is inferior to other men from the same community who have taken the course. His appreciation of the importance of public health measures is good but part of this is probably due to the influence of the County Health Unit. Incidentally, he has learned to care better for his own health (diabetes).

No. 10.—He has improved his equipment, has added an ophthalmoscope, and a baker, but his laboratory is unsatisfactory, though he has bought a microscope. He keeps records. He has more ability than appears on the surface, and probably practices better medicine than his score indicates. He has improved his knowledge of disease, but it is questionable whether he has improved much in the thoroughness of his examinations and in the use of newer methods of diagnosis, including the laboratory. He appreciates his limitations more.

No. 34.—Equipment and laboratory facilities have improved only a little. He has made and used with success a Balkan frame. He has improved in thoroughness of history taking and examination, in diagnosis and treatment, but he keeps no records and has improved his office but little. He is critical and honest in treatment even to his own financial loss. His reading has been stimulated. He uses the laboratory some, but does not do much of the work himself. He is much improved in respect to public health and preventive medicine.

No. 15.—Improvement in this case has been rather small, due, perhaps, to a certain stubbornness and also to a lack of interest in all except certain phases of practice which he particularly likes, especially surgery. Whatever improvement he has made has been mainly of a general nature, which he was bound to acquire

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by mere contact and it is doubtful whether he has been stimulated to do much better except in surgery, a certain amount of which he does. There has been no improvement in preventive medicine.

No. 33.—A man of rather poor training, handicapped by deafness and age who is rather slow to learn. Improvement is only moderate but he has limited his work, thereby gaining in thoroughness, he has improved his care of well infants and by not charging for each visit has improved this part of his practice. Records are kept of these patients. He has applied his teaching in obstetrics and in treatment of leg ulcers. The use of the laboratory is greater although he does little himself.

No. 25.—This is a man with only a fair training who has shown a great deal of improvement. Particularly noticeable has been the stimulus to better work manifested in better history taking, physical examinations, the keeping of clinical records and the greater use of the laboratory. This improvement is particularly noticeable in obstetrics and since taking the course he has prepared and published a manual for expectant mothers, a prenatal and postnatal record system, and has generally improved these services. He has been stimulated to prepare papers for medical societies, in particular papers on history taking and physical examination. Unfortunately, his enthusiasm has apparently led him to undertake more work (obstetric) than he can perform adequately, as a result of which measures are employed that detract from the quality of his practice. His equipment has changed little since taking the course but it was very good before.

No. 18.—A hard working, conscientious physician alert to his opportunity to learn, who has retained considerable of his training. His diagnosis is more accurate, his treatment is much better, especially with newer specific and near-specific treatment. He shows a good knowledge of public health matters. His reading has been stimulated and the numbers of the International Clinics show evidence of study. Laboratory work includes urinalysis and examination of blood and feces. Wassermann tests are made frequently. He gives adequate prenatal care. He would, undoubtedly, have graded higher had not his office burned, with the loss of equipment, library, etc.

No. 6.—Since completing his course he has revolutionized his office in regard to cleanliness and equipment. He has purchased ultraviolet and diathermy apparatus and has added a nurse assistant. The thoroughness of his diagnostic study is much improved, including greater use of his own and other laboratories. He has greatly increased his office practice with a resulting improvement in his service. Very few records are kept.

No. 7.—He has improved some in knowledge of disease, in treatment, but has probably not improved his methods much. His long experience, good sense, and good judgment aid him to a great extent. His equipment and facilities are not much better, but were good to start with. He keeps no records. He takes better care of his own health (diabetes).

No. 1.—One of the oldest of the group, who in spite of poor training, has educated himself by reading and study, attending meetings, and by postgraduate work until he is well above the average today in his community. Naturally, he has made good use of the opportunity of this course, though because of his fairly high initial standing, his relative improvement is not great. It has, however, enabled

him to keep abreast of present day medicine. As concrete evidence he now makes Wassermann tests on all pregnant women and many others, gives complete examinations, including pelvimetry in all primipara, packs the vagina instead of the uterus in uterine bleeding, and uses the laboratory to greater extent and advantage. He is an important factor in local public health activities.

No. 32.—He has improved considerably. Since taking the course he has added to his equipment a new table, a pelvimeter, and improved the facilities for laboratory work. His history taking, physical examinations and interpretation of findings are all much better but he keeps no records. His treatment is critical. He obtains electrocardiograms, basal metabolism determinations, etc. He reads more. He has introduced pelvimetry. Significant diagnoses are alternation, coronary occlusion and auricular fibrillation. Ill health has handicapped his development somewhat. He expects to introduce the use of artificial pneumothorax (has since then). His work in public health and preventive medicine has aided him in handling local community health problems.

No. 36.—A good man who had gotten into a rut from which he was lifted by the course with marked improvement. He has improved in thoroughness of examination and learned much in regard to interpretation. Improvement in treatment is shown by critical use of viosterol, intravenous infusions of glucose, etc. He has put in much equipment, especially in the laboratory, and is improving the latter work by association with a younger man. He is planning the introduction of clinical records. He has been stimulated to more reading and has improved his library.

No. 11.—A practitioner, working in a rather isolated community, almost entirely dependent on himself and so intellectually honest that he probably puts a worse interpretation on his practice than is actually the case. He has undoubtedly improved since taking the course but he has not made the best advantage of his increased knowledge and of his ability. Evidence of improvement is seen in the use of the microscope in the diagnosis of malaria, pyelitis, etc., making white blood counts, in the better use of physical examination, in which he had allowed himself to become careless, and in the adoption of more modern methods of treatment. He keeps fair records and reads a fair amount.

No. 9.—One of the best examples of the success of the course. A man with a poor training, practicing in an isolated community and dependent to a large extent on himself, has shown a marked improvement. Since taking the course he has added to his equipment, isolated but interesting examples of which are an excellent examining table and an instrument cabinet made locally. The office is surprisingly neat and clean. He keeps a fair number of records of good character. He has arranged an adequate laboratory in his office and employs other laboratories. The laboratory work which he does himself includes the examination of blood. His physical examinations are surprisingly complete, and his interpretations are good. His treatment is adequate and critical. The principal defect in his practice is the failure to go to see patients, giving out medicine and advice instead. This is probably due to economic causes for which he may not be altogether to blame. He was in attendance on the Commonwealth course in obstetrics at Bristol and attended the recent meeting of the Southern Medical Society in Richmond, probably at some financial sacrifice to himself.

No. 35.—He shows much improvement, manifested generally in more thorough examination, better interpretation and more modern treatment. It is especially revealed in his care of children, in prenatal care and in obstetric practice. He now employs a nurse on all obstetric cases. The use of the laboratory has increased greatly and the work in his own office includes examination of blood and stools. The use of an ophthalmoscope is significant. Recently he and other physicians have started a hospital on what appears to me to be a very satisfactory basis from a professional point of view, particularly since it appears that their principal object is the patient's benefit. He is apparently more alert about public health matters.

No. 57.—A good man, whose improvement consists mainly in thoroughness in examination, better use of the laboratory, greater diagnostic ability, more modern treatment and better records. His referring of patients is exceptionally good. Equipment and office show little improvement, but were good to begin with. The examiner was impressed with his improvement in diagnosis. He is also much interested in community health and takes an active part in these matters.

No. 22.—The youngest man in the group and one of the best before taking the course which had its effect on the relative degree of improvement he has shown. The course supplied to some extent the lack of internship. As a concrete example of improvement, he is introducing blood matching, grouping and transfusion, and has begun a complete clinical record system.

No. 5.—Another man who was a good practitioner before taking the course and for whom the course was of advantage mainly in enabling him to keep abreast of progress, and in stimulating him to do so. He has introduced transfusion, intraperitoneal infusion, etc., and is planning to give pneumothorax treatments.

No. 38.—This is a man who, in view of his age and training, has shown great improvement in all respects. Concrete evidence of his improvement is shown by his system of clinical records, by his introduction of pneumothorax in his practice, modern and proper use of iodine in thyrotoxicosis, and use of retention catheter and drainage in preoperative treatment of prostatic obstruction. He is a prime mover in his medical society, which meets weekly in his office, and is progressive and active.

No. 41.—This is the best type of rural physician with a foundation which enabled him to get much out of the course in which he was a diligent worker. The lack of an internship made the course especially valuable. Since taking it he has built a new office, added much equipment, introduced transfusion, infusion, use of convalescent serum in measles, etc. (on one occasion he performed a life saving transfusion with an improvised apparatus made in part from his stethoscope tubing). He has increased the percentage of his work in the office with increase in quality of practice. His examinations are more thorough. The effect of his training in preventive medicine is particularly evident. He maintains a record system. He has been stimulated to study and has prepared several papers giving evidence of considerable thought and study. He has used the library facilities of the American Medical Association, including foreign periodicals.

No. 4.—He is a man of considerable native ability, who practiced good medicine before taking the course, with excellent equipment, a good laboratory, includ-

ing x-ray, a competent technician, a good library and fairly good records; a man who read considerably and who had kept fairly abreast of modern medicine. His knowledge, however, was based on a rather poor training which left some curious gaps and defects in his ability, and his improvement has consisted mainly in unlearning certain things. As in the case of number 27, he undoubtedly acquired information regarding newer methods of diagnosis and treatment. His percentage of improvement was relatively small because of his high initial rating.

No. 27.—He was a very good practitioner before taking the course and is located in a fair sized city. His examinations and diagnosis are adequate, his treatment is modern, his equipment is very good and his records are adequate. As a result, his improvement has been relatively slight and consists mainly in the acquisition of knowledge regarding newer concepts of disease, diagnosis and treatment. In the writer's opinion he should not have been awarded a fellowship.

No. 12.—This is the best type of practitioner and the highest graded man in the group. His training was very good but was obtained years ago and he had fallen somewhat behind. The course pulled him very much up to date. For example, the laboratory work (in which he was proficient years ago when most were not) has been completely revised and brought up to date. New equipment has been introduced, his record system has been improved, many new methods of diagnosis and treatment were learned and put into practice. His reading has been stimulated. The improvement is most marked in his pediatric practice. He has an unusual record in public health work in his community which he has served as health officer for years, a service which has not failed to be helped by the course.

#### APPENDIX I.

##### STANDARD PRACTICE

The standard practice in the sense of this study is defined as follows:

**HISTORIES:** Adequate histories are taken in all but minor or obvious cases. They will consist of an inquiry into the present illness, a record of past illness and symptoms, a personal and family history. In many cases in practice the past, personal and family history is already known and in hospital parlance the history will represent a readmission.

**EXAMINATION:** An adequate examination will be made in all cases. In minor or obvious illnesses a local examination only is required but in any general illness or uncertain condition a complete physical examination is made including constitution, nutrition, skin, lymphnodes, skull, eyes (pupils—extraocular movements, exophthalmus and lid signs, conjunctivae and sclerae, etc.), nose, ears, mouth and throat, neck, chest (including heart and lungs and blood pressure) abdomen, genitals, extremities and a simple neurologic examination. When indicated such examinations as rectal and vaginal, ophthalmologic, otoscopic, etc., are employed. In obstetrics adequate examination including pelvimetry is a part of prenatal care, and post-partum examinations are made. When indicated examinations are repeated in whole or in part.

**INTERPRETATION:** The physician has an understanding of the modern concept of the commoner disease processes, the etiology, symptoms, physical signs and laboratory findings. He has some knowledge of the signs and symptoms of rarer diseases, recognizes his lack of knowledge in these and other circumstances and assumes responsibility for securing aid from others when his own knowledge and ability are inadequate. At the same time he is cognizant of the patient's interests in such situations.

**TREATMENT:** There is a knowledge of the modern specific and near specific treatment of disease, the ability to use such treatment as would be possible under the conditions of general

practice in smaller communities. For example, he would be expected to be able to properly use liver extract in pernicious anemia; quinine and the newer atebirin in malaria. The use of therapeutic malaria in general paresis would be known but he would not attempt to use it himself. The need of an appendectomy would be recognized but he would have it performed by a competent surgeon. Although the physician will be alert to the use of new methods of treatment he will be possessed of a critical attitude toward new and untried measures as well as critical of the results of the methods which he himself uses.

In addition to specific and near specific treatment he will use those auxillary measures often classed as supportive such as diet, exercise, rest and the like. He will also be alert to relieve the patient as far as possible by the use of symptomatic treatment.

**PREVENTIVE MEDICINE AND PUBLIC HEALTH:** Reportable diseases are promptly and completely reported. Isolation will include not only diseases which the law specifies but will be enforced so far as possible on his own initiative in such borderline diseases as pneumonia, tuberculosis, etc. Recognized immunizations will be carried out and urged in his own practice and he will be cooperative in such measures as are properly carried out by the public health authorities. Prenatal care will be a regular part of his obstetrical practice. He will be sympathetic toward health examinations and offer such service to his patients. In the field of education of the public he will endeavor to be a force for improving public health in his relations to his patients as well as in organized efforts in his community.

**LABORATORY:** Laboratory service will be provided to the extent demanded in modern practice in so far as circumstances permit. This may be provided by himself or in his office or by other laboratories. In general he will have facilities for the usual examinations of the urine (chemical and microscopic), blood (blood counts, smears, hemoglobin), feces (chemical and microscopic), sputum (tuberculosis), gastric analysis, etc. The equipment necessary for this is indicated in Appendix III. Urinalysis will be made frequently and particularly in pregnancy, medical conditions and in health examinations. Blood counts and smears will be made in suspected acute surgical conditions, in pulmonary disease, in suspected acute febrile illnesses, cases of splenic or lymph gland enlargement, suspected anemias, etc. Stool examinations will be made in diseases of the gastro-intestinal tract and when parasites are suspected. Sputum will be examined in all cases in which expectoration is a feature. Other laboratory examinations such as blood chemistry, blood grouping, Wassermann reaction, agglutination tests, X-rays, basal metabolic rate determinations, etc., will be secured when indicated and when possible. In particular, Wassermann tests will be employed freely and especially in pregnancy. In general it shall be expected that provision shall be made for securing these examinations when indicated and as far as the patient's circumstances permit.

**LIBRARY:** At least two or three medical journals should be taken including the *Journal of the American Medical Association*, and the State Journal. There should be a modern working library of books dealing with general medicine, surgery, obstetrics and pediatrics and others as they relate to general practice. Among the latter there might be books on diet, on minor surgery, on emergency surgery, on treatment, etc. There should be evidence of use of this library and the better physician will consult other libraries (such as perhaps the library of the American Medical Association).

**RECORDS:** Records of the history, examination, laboratory findings and progress will be kept in suitable form in the majority of cases, except those of minor or trivial illnesses. Only forms which permit the recording of the data in an available form will be considered acceptable.

**OFFICE:** The office is adequate in size, comfortable, reasonably well lighted, clean and neat. The reception room should be sufficiently equipped to be comfortable to the patient. Equipment should include a good examining table, screens, waste buckets, clean linen (sheets, towels, etc.), sterilizer, scales, charts, record cabinet, and desk. Supplies such as dressings, cotton, antiseptic solutions, anesthetics, gloves, tongue depressors, etc., should be adequate in amount, clean, and of good quality. There should be a set of dressing instruments, emergency and minor surgery instruments, and best practice would include prepared sterile sets. There should be adequate obstetrical instruments and supplies preferably put up in units ready for use. Such prepared outfits should include medicines commonly used in emergencies, morphine, adrenalin, pituitrin, etc. There should be an adequate outfit of examining instruments, light, blood pressure instrument, stethoscope, reflex hammer, specula (nasal, vaginal, ear, etc.) and preferably an ophthalmoscope. Other apparatus as bakers, ultra violet lamps, diathermy, etc., may be had. If dispensing is done it should be done critically.

**APPENDIX II**  
**SCORE CARD**

Name .....	Date .....
Practice (400)	
Diagnosis (250)	{ History (50) Examination (100) Interpretation (100)
Treatment (100)	{ Supportive (30) Specific (50) Symptomatic (20)
Preventive and Public Health (50)	{ Isolation (10) Notification (10) Immunization (10) Health examination including prenatal (10) Education (10)
Laboratory (300)	{ Space (20) Physical facilities (Gas, lights, water, etc.) (30) Equipment (See list) (50) (Work done (Amount and character—Includes public and private laboratories) (200)
Reading (150)	{ Journals taken (J.A.M.A., State, Am. J. Med. Sci., Surg. Jour., Specialty) (30) Books (Number, edition, selection) (20) Knowledge—Use (100)
Records (100)	{ Number (50) Character (50)
Office (50)	{ Cleanliness (20) Space (Amount and character) (10) Equipment (20) Reception (Desk, chairs, table, reading matter ( <i>Hyphea</i> ), lights, record files, etc.). Office (Examining table, linen, screens, buckets, specimen containers). Instruments (Dressing, minor and emergency surgery, obstetrical, examining, packed bags, anesthesia, cabinet, blood pressure, light, reflex hammer, stethoscope, ophthalmoscope, otoscope, specula). Supplies (Dressings, gloves, tongue depressors, antiseptics, etc.). Apparatus (Sterilizer, scales, X-ray, ultra violet, B. M. R., bakers, baths, diathermy). Dispensing.

**APPENDIX III**  
**APPARATUS AND CHEMICALS FOR SIMPLE LABORATORY**

Apparatus

Test tubes (Chemical type with lip)—6 or more.	Urinometer—1.
Centrifuge tubes—4 or more.	Albuminometer (Esbach's)—1.
Wassermann tubes—6 or more.	Hollow slides for blood grouping—2 or more.
Test tube brush—1.	Fermentation tube—1 or more.
Test tube holder—1.	Glass slides (box)—1.
Test tube rack—1.	Filter paper—small (box)—1.
Graduate (50 cc.)—1.	Filter paper—large (box)—1.
Graduate (1000 cc.)—1.	Litmus paper—blue and red (each)—1.
Burette (25 cc.)—1.	Bunsen burner—1.
Pipette (1 cc.)—1.	Tripod—1.
Pipette (Bacteriological) (1 cc.) graduated—1.	Wire gauze—1.
Pipette (Mohr) (5 cc.) graduated—1.	Ring stand—1.
Pipette (Mohr) (10 cc.) graduated—1.	Dunning colorimeter for renal function—1.
Pipette (25 cc.) quantitative—1.	Centrifuge—1.
Funnel (3 in.)—1 or more.	Water bath—1.
Petri dish (half)—1 or more.	Microscope—1.
Erlenmeyer flask (150 cc.)—1 or more.	Mechanical stage—1.
Porcelain dish—1 or more.	Counting chamber and pipettes—1.
Beaker (250 cc.)—1 or more.	Hemoglobinometer—1.
Stirring rod—1.	Comparator and Standards for Icterus Index—1.

Chemicals and Stains

Acetic acid 5 per cent.	Nitric acid—fuming.
Acetic acid—glacial.	Sodium carbonate (anhydrous).
Hydrochloric acid N/10.	Benedict's solution—qualitative (See Outline for formula).
Nitric acid—concentrated.	

Benedict's solution—quantitative (See Outline for formula).  
 Sodium hydroxide N/10.  
 Sodium hydroxide 10 per cent.  
 Ferric chloride 10 per cent.  
 Saturated solution mercury bichloride.  
 Alcohol 95 per cent.  
 Acid alcohol—95 per cent alcohol containing 3 per cent of hydrochloric acid.  
 Dimethylaminoazobenzene 0.5 per cent (Topfer's reagent).  
 Phenolphthalein 1 per cent.  
 Tsuchiya's reagent (For formula see Seifert and Mueller p. 201).  
 Ehrlich's Aldehyde reagent—2 gms. of para-dimethylaminobenzaldehyd in 100 cc. of 20 per cent hydrochloric acid.  
 Saturated solution of Ammonium Sulphate (For protein in spinal fluid).  
 Methylene blue.  
 Anilin gentian violet.  
 Gram's Iodine.  
 Safranin 10 per cent.  
 Sudan III.  
 Wright's stain.  
 Brilliant Cresyl blue 0.5 per cent in absolute alcohol (for reticulocytes).

Donaldson-Kofoid Iodine-Eosin.  
 Oxonated turpentine.  
 Guaiac crystals.  
 Hydrogen-peroxide.  
 Ether.  
 Super saturated sodium chloride solution.  
 Blood counting fluids:  
 1. Hayem's  
     Sodium chloride 1.5 gm.  
     Sodium sulphate 7.5 gm.  
     Bichloride of mercury .75 gm.  
     Distilled water 300 cc.  
 2. Acetic acid 5 per cent (or Turk's solution).  
 Known serum from groups II and III for typing.  
 Distilled water.  
 Solutions for Van den Bergh test  
 A. Sulphanilic acid 0.1 gm.  
     Concentrated HCL 1.5 cc.  
     Distilled water 10 cc.  
 B. Sodium nitrite 0.5 gm.  
     Distilled water 100 cc. (will keep 2 or 3 weeks).  
 Solutions A and B must be mixed just before the test.

## Value of the Short Course in Graduate Teaching\*

FRANK R. OBER

Assistant Dean in Charge of Courses for Graduates, Harvard Medical School  
Boston, Massachusetts

In a discussion of any subject in graduate teaching, there must be considered three factors: First, the need; second, the demand; and third, the educational value.

First, the need for short courses is only in a restricted field.

Second, the demand primarily follows sound advertising and the creating of a desire in the mind of the physician for the type of course to be given. If only one or two inquire about special short courses, then there is no demand. When many inquiries come in over a long period of time, it is safe to begin advertising.

Third, the educational value of certain courses has been demonstrated, and such a demonstration shows that there is increased interest, on the part of the prospective student, in short courses.

The short course fills a need of the busy practitioner who desires to increase his knowledge in a single subject in the shortest possible time. A good example is a course on diseases of the thyroid gland lasting one week. Short courses seem to be handled best when carried on by competent men who are interested in special lines of endeavor pertaining to the course. Their efforts should be arranged so that from the beginning to the end there is an even, well balanced flow of subject matter. Emphasis on any one portion out of proportion to another will result in a total lack of complete comprehension by the student. The course must be compressed and concentrated and kept constantly moving all day and every day for a week. At the end of this period, the student is so saturated that it is wise for him to stop.

These courses are more valuable when given to limited numbers for the reason that the student is in closer contact with the teacher and the subject matter. Limitation of numbers has a further value in that there is less formality, with a consequent loss of shyness, a result of which is keener interest on the part of the student, especially noticeable in the question period that some teachers use. At first, it is wise to have the questions submitted on paper. Long before a course is to be given, it is well for all those taking part to get together one or more times and work out a plan of procedure. Nonessentials, "dead wood," and reverse pyra-

\*Read at the Forty-fifth Annual Meeting of the Association of American Medical Colleges held in Nashville, Tennessee, October 29-31, 1934.

miding of ancient medical knowledge is boring to the graduate and not productive.

The following may be suggested as suitable subjects for courses of one week's duration: endocrine disturbances; arthritis; cancer; diagnostic problems in surgery; vaccine therapy; poliomyelitis; diabetes; diseases of the blood; circulatory disturbances; fractures; brain and cord lesions, etc. These subjects may be assembled in such a way as to make a long continuous course for those who wish it, or any section may be taken by those interested in one or more subjects.

The fracture course conducted once a year at the Massachusetts General Hospital by the Fracture Service is a good example of a well organized, short, intensive course. This course has run for nine years and is very popular and successful. It was not given two years ago as there were not enough takers. This year there were one hundred and two members, representing fifty different schools, thirty-four states, two Canadian Provinces, one territory and one possession. The course begins at 8:30 a. m. and continues until 10:00 p. m., lasting a week. All aspects of diagnosis, treatment and end results are thoroughly considered. Question periods are frequent and instructive and serve to keep up a keen interest during the hours of demonstration. This course has become so successful that it would seem that others might be organized and conducted with equal success.

*Longer Short Courses Lasting One or Two Months and Given Half Days:* For many years schools have given courses of this length known as "brush-up courses." It gradually dawned on us that these were considered good enough to produce specialists in certain fields and the certificates given for attendance were hung in many offices attesting to the knowledge acquired and showing the public that a new specialist was in existence. Such courses were for the most part a failure because they were usually taken during vacation periods—ball games and gossip about hospital corridors being common forms of indulgence. The result of this was little knowledge on the part of the student and more or less disgust on the part of the instructor, who became tired of making constructive efforts and promptly forgot his pupils.

After years of this sort of thing, graduate instruction degenerated more or less into the doldrums and was taken on as a side issue to be done at convenient hours. As a result of the failure of half-day courses, all day, monthly and two months courses have been organized which have been more successful. Such courses are especially valuable to the general surgeon who is interested in particular fields and wishes to contact with those who are progressive or have special methods in technique.

There is a third field in which the short course is useful, and that is

in the community or small city hospital. The men in these hospitals could organize short courses lasting a day, for a week or for two weeks. It is preferable to have courses which come once a month and last all day and continue throughout the year. The day courses may be organized similar to the ones held in Lewiston, Maine, in which some man of note is invited to spend the whole day at the hospital, having formal ward rounds in the morning, going over a group of patients. A round table discussion is held in the afternoon with examination of cases or discussion of methods of laboratory technique or any other interesting problems which may arise. In the evening, formal instruction is given on one interesting topic, and this lecture is best given without notes.

In preparing for short courses, it might be wise for the instructor to get up a typewritten syllabus with reference to the literature on the subject under discussion. References should be confined to the journals to which the average doctor usually subscribes. This syllabus should be handed to the students the day before instruction is to begin in order that he may go to the library to become a little more familiar with the subject. In this form of teaching the student is more likely to be kept interested and awake and is also more inclined to ask intelligent questions. If the instructor has any reprints of his own on the subjects, it would be well for him to hand some of them to his pupils.

The experience with short, intensive courses at Harvard Medical School is that there is greater interest on the part of the student and teacher. The teacher makes more of an effort to be successful and the student is kept awake and interested in compact and comprehensive programs. It is our intention to expand such courses more and more as the demand increases.

#### DISCUSSION

##### ON PAPERS OF DRs. MARRIOTT, ORDWAY, PARKINS, RAPPLEYE, YOUMANS AND OBER.

**DR. LOUIS B. WILSON** (University of Minnesota, Rochester, Minn.): Dr. Marriott has described an excellent technic in the training of graduates for medical specialties. Relatively few of the medical schools are giving adequate attention to this subject. In my opinion, there are at least sixteen medical schools in the United States and Canada which have ample facilities for extensive work in the training of medical specialists. Yet only five of the sixteen have organized medical graduate work. A few other schools are doing excellent graduate work in the specialties but on a very limited scale. There is a great demand not for observation and superficial training but for thorough graduate training in medical specialties.

One factor which may inhibit schools and hospitals from utilizing their opportunities for proper graduate training is the excessive routine clinical work which is demanded of residents. The internships, we all agree, should be concentrated

on work of purely clinical interest, but medical residents and surgical residents looking toward preparation in a special field, should spend part of their time on those special phases of anatomy, physiology and pathology underlying their fields of special clinical interest. If provision were made for such work in hospitals in association with medical schools it would provide the best possible training next after the internship.

I am inclined to emphasize research more than has Dr. Marriott. We are constantly making the assertion that the practicing physician should do clinical research. Certainly he should, but usually he is ignorant of the ways and means of research. The function of research for students in the graduate school is similar to that of target practice. By it the future clinician learns how to load his gun and fire it.

Of the thousand or more men who have left the Mayo Foundation and whose residence has averaged a little more than four years, about 50 per cent of those majoring in preclinical fields and about 25 per cent of those majoring in clinical fields have done outstanding research. That seems to be sufficient reason for insisting that every graduate student of medicine should have opportunity to attempt serious research under skilled supervision. Such training will do much to improve clinical research which is one of the most important and also most neglected of all of our fields of medical endeavor.

I would differ a bit with Dr. Marriott on the question of a fixed curriculum. The individual who is planning to be a specialist should plan his own curriculum. He should be advised as to what he should do but he should have the opportunity to do what he wishes to do. This should be the sole basis of the curriculum. The specialist's individuality must be preserved. His competency should not be judged by a curriculum but by his knowledge and skill.

Dr. J. M. H. ROWLAND (University of Maryland): We have had a most excellent series of papers. These papers have dealt with postgraduate instruction, chiefly with postgraduate instruction of physicians, not only in medical schools, but also, to some extent, by extension work outside of schools and the relation of the medical school instruction to the community served.

Dr. Ordway's paper detailed the very excellent work that has been done for years at Albany. He mentioned the communities in which and for which the work is done. One of the other speakers spoke of the type of the community, but I think not enough emphasis has been laid on the subject of the community in which the work is to be done after the man has been taught.

I have had considerable experience in attempting to do extension work along a particular line (maternal and child welfare), and in doing this I met quite a number of groups of physicians and became acquainted with many communities. In the first place, if you carry the message to the doctor, you may find a man eager and ready to learn, or you may find a man whom you can compel to listen if you put your material to him attractively enough, or you may find a man who is entirely inert, who simply has to be blasted out of his inert condition by some other method than by attempting to instruct him.

You find also communities which are fairly intelligent, some highly intelligent, and some quite ignorant. Unfortunately you usually find the inert and indifferent doctor in a more or less ignorant community.

I want to speak particularly from the standpoint of the community itself and the extension work. A great deal is being done, of course, by state health depart-

ments, all sorts of boards, and all sorts of social service workers and health nurses, but it does not seem to reach the spot and the results are frequently unsatisfactory. My opinion is, and this opinion has been formed after visiting many communities, that each community, in the end, gets just exactly the kind of practice it demands. I found that talking to groups of physicians in isolated communities or attempting to bring them to the university for instruction was, to some extent, a failure, not always but to a certain extent.

I found, however, that when we began to educate the community in which these doctors work by all sorts of devices, lectures, moving pictures, talking to women's clubs, talking to ordinary factory workers in the small industrial towns, we got not only an intelligent response from the community, but we began to get better service from the doctors. Educate the people, usually the women, of a community to know what they need and really ought to have, and they are very soon going to begin to demand it, and as soon as they demand it they will get it.

The work we have been talking about this morning is very important, but any kind of extension or postgraduate work is not going to attain its fullest efficiency until it takes into consideration the community in which the men are going to practice. If you could strike some sort of public education in medical matters which is a compromise between the lurid and obnoxious matter which appears in many of our magazines from our brilliant friend in the Northwest and nothing at all, it would be a very wise compromise, and I think would do an amazing amount of good.

**DR. RAY LYMAN WILBUR** (Stanford University): The great difficulty I see in this whole matter of postgraduate instruction is that of a proper financial set-up. You noticed this morning the different methods used to finance these various products, some through foundations, once by a hospital, again through the doctors themselves, and then through the state institutions, and again through the assistance of the state medical society, the county society, or, perhaps, the American Medical Association.

If these people are really going to get forward with this whole project as an American project, they will have to have somebody or some group make a careful study of the proper method of financing all of this postgraduate instruction in all parts of the country.

The first question we have to ask ourselves is: Can we anticipate that the doctor will go farther than the medical student in providing for that instruction? We have heard that the medical student pays one-third of his cost. If the doctor will not go farther than that, how are we to work out this problem,—through the state universities, the societies, or through the endowments? Personally, I have the feeling that if the doctor could see all of its implications, he would be willing to provide a large part of the cost, if not all, but that means education of the profession as to their growing responsibility to a public that is becoming better informed.

**MR. W. T. SANGER** (Medical College of Virginia): I would like to report an experiment we have conducted for four years in receiving at our negro hospital, one of four hospitals, for two weeks in the summer a group of negro physicians. This is a state institution in a Southern city, a white medical school with a large negro hospital. The work was encouraged by one of the foundations which has financed the project in the main.

The local negro medical society was asked to send representatives to meet our faculty committee for conference. The state and local societies later sent representatives, and the program for the first year was worked out jointly. Only men from Virginia were invited that year to attend the clinic, and we had about twenty-two.

The success of the clinic seemed to warrant a second experiment the following year for two weeks in the summer, from late June to early July. The men who attended the clinic the first year, for the most part, participated in the set-up for the second year. That sort of plan has been followed now for four summers, the program of instruction varying year by year.

After the fifth year, we hope to make an appraisal of the result of that experiment and determine more or less definitely on a future program. We began by teaching very much in accordance with the program followed for fourth-year medical students in our institution, but that has been modified; and it is interesting to report that quite a group of men have attended all four years and have contributed very helpfully to a proper set-up for their instruction. The emphasis, of course, is definitely on preparation for better general practice. That is the emphasis throughout. It includes hospital work, lectures, outpatient service, and so on.

We have now decided to accept students from other states. We had men from Georgia, North and South Carolina, as well as from Virginia, last year, a total of forty. Although we had attempted to limit our work to twenty-five, the pressure was so strong this last year that we accepted forty.

We hope this Association will make some arrangement to permit the dean of our medical school (he is director of this project) to present a report of the accomplishments over a five-year period.

**DR. W. S. LEATHERS** (Vanderbilt University): I should like to mention a few points in connection with the postgraduate course for physicians which is given in the Vanderbilt Medical School. Following each annual course of instruction the physicians are advised by the Commonwealth Fund to write letters indicating their criticisms of the instruction received and also offer suggestions as to how the course may be improved. These letters have been interesting and very constructive.

The physicians to whom this request was made were urged to be frank and state whether or not the teaching in any particular subject was entirely satisfactory, or in what respects the particular phase of instruction could be improved.

In instances these men have written rather lengthy letters indicating their impressions of the course, the content, and whether or not they were adapted to what was offered. These comments are considered from the standpoint of their preliminary educational qualifications and also with reference to their professional experience.

These letters are transmitted to Dr. John Youmans, Director of Postgraduate Instruction in the Vanderbilt Medical School, and abstracts of them are transmitted to the professors concerned so that they may profit by the reaction of the physicians whom they taught. This has afforded a means during a period of several years of making modifications in the courses of instruction in the respective subjects, and as a result certain improvements have been made each year. I am of the opinion that this is an important method in planning postgraduate instruction because many of the physicians are entirely competent to offer constructive suggestions.

These men know their needs and should be given an opportunity to express their points of view as to whether the instruction offered is adapted to the requirements in general practice.

With reference to the instruction given in preventive medicine and public health, I undertook this with some degree of trepidation because I was conscious of the lack of training of most of the men in this phase of medical service as undergraduate medical students, and, therefore, I had some reservation as to whether they would be interested in devoting their time to a certain number of class conferences and field demonstrations as physicians in general practice. I was agreeably pleased with the results. A simple schedule has been developed which is particularly adapted to the practice of medicine. The physicians are taken in a group on certain field trips, for example, to one of the full-time county health departments, and several hours are devoted to, in this instance, a discussion of the organization of the local health department, the program, the methods of field work, and the results obtained. The discussion is directed so that the physicians will have opportunity to express their points of view concerning the relation of the department to the practitioner in carrying on such work as immunization, medical examination of school children, correction of physical defects, prenatal and postnatal supervision, and so forth. We endeavor to obtain their suggestions as to how the program may be integrated with the practice of medicine in certain aspects of the work, and we also invite their criticism of what is being done.

I have found the physicians to be public spirited and liberal minded with reference to public health work. I have been impressed with the fact that altogether they are interested and are anxious to make their contribution in the maintenance and promotion of an efficient public health program in their respective counties. A round table discussion of matters of this kind with members of the medical profession is always of value, and it appears to me that in offering post-graduate instruction in different medical schools those who register for such work should consistently be given an opportunity to become acquainted with the modern ideas in public health.

I am certain that the effort which is being made in the course given at Vanderbilt is of value and will result, in general, in more definite interest on the part of practitioners who have taken the postgraduate course in the application of methods for the prevention and control of disease in general practice. This phase of medical service is of great importance to the public and they are appreciating as never before the value of preventive measures. Unless the medical profession assumes the attitude of expressing intelligent points of view with reference to what should be done concerning the prevention of disease, it seems to me we shall lose ground in dealing with thoughtful people. It is, therefore, fundamental that physicians be given opportunity in any program of postgraduate instruction to become acquainted with preventive measures employed in the modern public health program. They should be stimulated to make their contribution in cooperation with the official public health agencies in the practice of medicine.

**DR. C. D. LEAKE** (University of California): It seems to me there is great danger in postgraduate medical instruction, as in many other phases of medical education, of too great formality. It was cheering, therefore, to have heard Dr. Marriott deplore a tendency toward regimentation.

It is, of course, very nice to be able to indicate in a catalog or in medical periodicals that certain courses are being offered for postgraduate work and that

fees are charged, and so on, but I am rather of the opinion, after considerable experience in this field in many different communities, that there are easier and better ways to take care of the matter.

I think, for example, in connection with the refresher courses that have been suggested, that, perhaps it would be much wiser to ask the physician who is anxious to refresh himself to take the regular undergraduate course that is provided in that subject. If he is interested in a preclinical field, let him take the course in physiology with the undergraduate students, or at least listen to the lectures. If he is interested in the clinical field, let him take the lectures given in that subject. In that way, I think, he would refresh himself better than through a specially designed course for him, and, perhaps, with much greater ease. There would, of course, under such a system, be no necessity for additional fees.

Secondly, if a graduate is interested in special work, improving himself in a specialty, perhaps, the best solution would be for him to work directly in personal contact with the master with whom he desires to work; that is, the personal contact or apprentice system rather than the institution of a special course or series of courses designed to develop a special type of investigator.

Thirdly, there is an important public health aspect to the problem of post-graduate medical instruction. It is necessary that physicians everywhere maintain a standard satisfactory for the maintenance of adequate public health. That becomes, in my opinion, a state problem, a problem for society. It can be handled very satisfactorily through the cooperation of the medical schools, either by an arrangement of extension lectures in connection with county societies or by other means.

One of the most successful methods of promoting an improved condition of the physicians of a community, particularly in rural districts, is through the establishment of a circulating medical library. Extensive experience has been accumulated in that field in Iowa, Wisconsin and in California, and it has been found to be one of the most efficient ways by which rural physicians particularly may be kept abreast of current medical advance.

It seems to me that if there were less formality in connection with postgraduate instruction and more attention to the utilization of existing facilities, without setting up any special program or any special facilities or special fees or anything of that sort, the whole matter might be solved much more satisfactorily and much more easily than by attempting to do it otherwise.

Dr. LOUIS B. WILSON (University of Minnesota, Rochester, Minn.): Apropos of Dr. Ober's paper, may I relate an experiment? For several years we have been conducting an inactive duty training unit for military medical reserves. The medical departments of the army and navy and now the public health service send instructors from their regular corps for two weeks each fall to the Mayo Foundation. Medical reserve officers from any of these services and from anywhere in the United States may enroll for the course. This year 180 of them came from widely distributed points of the United States. They paid their own expenses and were charged no fees. The Foundation furnished free space and considerable teaching personnel. The only expense to the Government was the travel pay and maintenance of the regular corps officers on duty as instructors.

The forenoons are left free for observation in the Mayo Clinic. The afternoons and evenings are devoted to intensive instruction in military medicine. This year the course pertained largely to public health, hygiene and sanitation. These

subjects as related to most communicable diseases have the same bearings in civil life that they have in military life.

Washington University and Michigan University are conducting similar projects. There is opportunity and great need for several more of the larger university medical schools to do similar work.

**DR. THOMAS ORDWAY** (Albany Medical College): We have tried having graduate students take work with undergraduates, but it did not work. We therefore decided against such a procedure, except in the case of certain didactic and clinical lectures.

**DR. LEROY E. PARKINS** (Harvard University): I wish to emphasize what Dr. Rowland said, the necessity of improving the intelligence of the whole community. You all realize the tremendous advances of adult education in the last few years. This Association and the rest of the profession are simply a part of the whole adult population. We go up and down together. It certainly behooves the medical profession, and this Association in particular, to take an active part in this adult approach to education.

I speak from a little experience with some public officials. A mutual friend asked me if I would talk to the governor one afternoon. I went to the state capitol, and he spent two hours talking to me about the matter of postgraduate medical instruction. When he got through, he asked if I would consult with Dean Ober and provide him with a group of ten prominent citizens of his state, including five doctors and five laymen, to organize a committee to finance a project to educate the doctors of his state. Offhand, I thought that was a wonderful idea.

After I returned to Boston and talked with Dr. Ober, we made out the list of prominent men, including college presidents and presidents of the various groups of the profession in that state. But we had a second thought. We talked it over with Dean Edsall, and he wondered whether that was the proper thing to do. The result was that I returned to the governor and told him that we recommended this not be done for the very practical reason that as physicians we felt the profession should not be over urged. We do not want to be smoked out by publicity and I do not think we will be. Among all the individualistic crowds in the world, I think the medical profession stands highest. We want to organize postgraduate medical instruction and conduct it ourselves.

The governor did not do anything about it. He is a very intelligent man, and he said he thought that was right. Later, I talked to a former governor, and he said he thought it was absolutely right. He said when and if the profession got behind this movement to organize and finance it, they would be willing and glad to help.

On the matter of finances for the extension courses in Massachusetts, we charge \$5 for a course of ten sessions. We had a faculty of 170 instructors who were paid only their expenses, travel and otherwise, the first year. We came out of that first year with a credit balance; this year we propose to pay the "faculty" a salary. We do not know how large it will be, but it will be something more than expenses.

**DR. FRANK R. OBER** (Harvard University): I have been very much interested in this program. There are a few things which have to do with the weakness of graduate teaching. In the first place, undergraduate teaching is usually of prime importance and graduate teaching is of secondary importance. The undergradu-

ate is striving for a diploma, a degree and a license to practice medicine, all of which are positive factors to be overcome. The graduate student belong in a negative group. Too frequently he is willing to ride along with knowledge he gets in undergraduate days. Many of them rarely read their medical journals and, I fear, too few keep up with modern medical literature. If the man is successful in a financial way, there is no incentive to encourage him to search for more knowledge, and too few realize that when a man stops studying in medicine, he belongs to the past. The best way for the graduate to combat the cults is not to fight them but to keep in touch with all the modern progress in medicine.

One of the crucial factors in the scheme of graduate teaching is that it is almost wholly, or with very few exceptions, on a commercial basis. The doctor who needs instruction the most is not able financially to get it, and the teachers giving the course are not greatly interested because the remuneration is not sufficient to pay them for the time spent. It seems to me that it would be a good scheme if all the schools in this country which give courses for graduates could be endowed so that certain aspects of graduate teaching might be handled by men on a part-time or a full-time basis, so-called key men who receive an adequate salary. Certainly, capable men, who are willing to devote a good part of their time to teaching, ought to receive an adequate salary.

The problem in clinical research, or some of the problems, ought to be a part of the function of the graduate school. Internships and residencies, especially in the specialties, should be a part of this function also. Interns and residents in hospitals, outside the teaching centers, should receive constant instruction. Some of the visiting surgeons and physicians of these hospitals ought to have a special interest in seeing that their interns are given special instruction.

All the schools giving graduate courses might agree to cover certain types of work which they are best fitted to handle, and the country could be divided into regions for this purpose. To this end, I would recommend that this body form a committee to look into the curricula of all the graduate schools in the country. Suggestions and recommendations could then be made which would help to put this important subject on a primary instead of a secondary basis. Only recently in London, England, there has been formed a school for graduate instruction which has been put on the primary basis, and the professors or heads of the departments in this school are supposed to be on a higher plane than those in the undergraduate schools.

## Correlation of Accomplishment in the Arts College and in the Medical School of the 1933 Freshman Medical Students

FRED C. ZAPFFE

Secretary, Association of American Medical Colleges  
Chicago, Illinois

When the Executive Council of the Association of American Medical Colleges decided that reports on the accomplishment of their students in the first year in medical school be sent to the arts colleges, it seemed to be a good opportunity to essay the collection of data which might have a bearing on the selection of medical students on the basis of their scholastic standing in the arts college. As such information furnished by the arts colleges would be worthless unless it could be correlated with similar information furnished by the medical schools, the latter were requested, when reporting on the accomplishment of the freshman students, to rank them by thirds of the class. This rank was added to the reports sent to the arts colleges, and they were requested to return to this office the duplicate of the report sent them indicating the rank of each student, by thirds, in the arts college. Reports were not sent to a college or university on those of their students who attended their own medical school as their records are on file in the registrar's office. That is, a student from Harvard College, who attended the Harvard Medical School, can easily be checked as to his performance in both schools at the same source, the registrar's office. For the purpose of this study, this information doubtless would have considerable value, but it would add greatly to the work of an already heavily burdened registrar's office. Furthermore, it would seem that it can safely be assumed that each medical school which is a part of a university or college selects from its own group of students the best. In fact, previous studies on student accomplishment definitely show that this is the case. These students make a much better record than do those of their erstwhile classmates who attend some other medical school than their own. This report, then, is based on those students who attended a medical school other than their own, comprising more than one-half but less than two-thirds of the 1933 freshman class.

The arts colleges responded well to the request for this information. Replies were received from 92 per cent of the colleges receiving the reports. Many interesting comments were made by these schools, and a few curious ones, to which reference will be made later. The colleges were greatly pleased to receive these reports. They stated, almost unanimously, that it

was the first experience of the sort although some medical schools do send such reports on their own students, and the hope was expressed that the work would continue but that it might be extended to include all of the years of the medical course, which it will as soon as reports on all classes are being received from the medical schools.

FIGURE 1. CORRELATION OF RANK IN ARTS COLLEGE WITH RANK IN MEDICAL SCHOOL.

STANDING IN ARTS COLLEGE	STANDING IN MEDICAL SCHOOL - <i>Thirds of Class</i>			
	UPPER	MIDDLE	LOWER	FAILED DROPPED
UPPER	52.0	30.7	14.5	2.8
MIDDLE	20.2	41.8	28.0	10.0
LOWER	10.2	27.5	39.3	23.0

The data presented herewith disclose what one would expect. The good students do good work, on the whole, in medical school; the average students do average work, and the poor students do poor work. Figure 1 shows this very well. Fifty-two per cent of students who were ranked in the upper third of the class in the arts college received a similar rating in the medical school; 30.7 per cent dropped to the middle third; 14.5 per cent dropped to the lower third. It could have been predicted, then, that more than one half of this group of students would equal their record in college. Only one-seventh of the group fell down badly.

Of the middle third, or average students, only 20.2 per cent improved their standing in the medical school by getting into the upper third; 41.8 per cent remained average; 28 per cent dropped into the lower third. Only one-fifth of this group bettered their college record; about one-third did not do so well. Nearly one-half remained average.

The lower third group in college, on the whole, constituted a large part of the lower third group in the medical school. Only 10.2 per cent earned a ranking in the upper third; 27.5 per cent fell into the middle

third; 62.3 per cent remained in the lower third. The chart depicts this graphically if one draws a line from the upper left hand corner to the lower right hand corner, remaining to the left of the "failed-dropped" column.

The chances of the three college groups being ranked in the upper third group in medical school are, in their order, about: 52 per cent; 20 per cent, and 10 per cent, or 1:1; 1:5; 1:10.

The failures, not in subjects but for the whole year (including "failed," "dropped" and "withdrew because of poor or failing scholarship") are of even greater predictive value. Only 2.8 per cent of the upper third group fell into this classification; 10 per cent of the middle third group, and 23 per cent of the lower third group. In other words, about one out of every four students in the lower third of his class in college will fail of promotion to the second year; one out of ten in the middle group, and one out of thirty-four in the upper group. It must be remembered that these percentages are based on about 4,000 students and that encumbered records in medical school (conditions and failures in subjects and incomplete work) are not included in the failed group. Students with encumbrance gained ranking in each of the three groups, although most of them, about 90 per cent, ranked in the lower third of the class. In other words, the lower third medical school group of the lower third college group contains the majority of students with encumbered records.

Refusal to accept students in the lower third group would apparently reduce the 14-15 per cent mortality of the freshman class by two-thirds, or to about 4.5 per cent.

ACCOMPLISHMENT, BY PERCENTAGES, OF THE RECOMMENDED AND THE NOT RECOMMENDED GROUPS.

Recommended—73.5 per cent.

Clear—77.6			Encumbered—13.5			Failed—5.5			Withdrew—3.4		
U	M	L	U	M	L	U	M	L	U	M	L
41.5	40.5	18.0	1.9	28.2	69.9						

Not Recommended—26.5 per cent

Clear—41.4			Encumbered—25.9			Failed—27.4			Withdrew—5.3		
U	M	L	U	M	L	U	M	L	U	M	L
18.0	43.9	38.1	2.3	16.1	81.6						

A study of the accomplishment in medical school of this group of students as correlated with whether they were or were not recommended (by the college, not individual professors) for admission to medical schools also discloses some interesting data. Many arts colleges refuse to make any recommendations; some feel that acceptance should be left entirely to the medical school; some will not recommend any student who ranks in the

lower third of the class; one college shades its recommendations according to the supposed "class" of the medical school; i.e., it will not recommend a poor student to a medical school which is "particular" but will recommend him to a medical school which "is not so particular;" one college feels that any student who wants to study medicine should be given a chance to do so. Many colleges stated that they would gladly give a recommendation when warranted, or otherwise, if asked to do so by the medical schools.

Among the complaints made by arts colleges, the outstanding one is that medical schools do not pay attention to "not recommended." One college stated that a medical school had not even asked for a transcript of the record of a student whose application was accepted.

On the basis of whether a recommendation was or was not given, or whether it would or would not have been given if asked for by the medical school, the following data are educed:

Of the students falling into this whole group (which is not as large as the group considered above as some arts colleges, will not make a recommendation, either favorable or unfavorable), 73.5 per cent were or would have been recommended; 26.5 per cent contrariwise. In considering these two groups, the former will henceforth be designated as "A;" the latter as "B."

Group A. In this group, 77.6 per cent had a clear record—41.5 per cent of those with clear records ranking in the upper third of the class; 40.5 per cent in the middle third, and 18.0 per cent in the lower third. Encumbered records were received by 13.5 per cent, 1.9 per cent of these ranking in the upper third, 28.2 per cent in the middle third and 69.9 per cent in the lower third. Five and one-half per cent failed, were dropped or withdrew because of poor or failing scholarship. Three and four-tenths per cent withdrew on account of illness, lack of finances or for a reason either not known or not stated.

Group B. This group furnishes a marked and significant contrast to Group A. Only 41.4 per cent had a clear record—18.0 per cent ranking in the upper third; 43.9 per cent in the middle third, and 38.1 per cent in the lower third. Twenty-five and nine-tenths per cent had an encumbered record, 2.3 per cent ranking in the upper third, 16.1 per cent in the middle third and 81.6 per cent in the lower third. In the failed group were 27.4 per cent; 5.3 per cent withdrew for reasons other than poor scholarship.

It appears to be clear, then, that, if 27.4 per cent of "not recommended" students fail, as against 5.5 per cent of "recommended" students, that such action on the part of the arts college is greatly to be desired and should

be considered as an aid in the selection of medical students. The "not recommended" group falls far below the "recommended" group, especially in the percentage of failures, in which it stands very high. Only one out of about eighteen in the "recommended" group fails, whereas one out of about four (slightly less) of the "not recommended" group fails.

In summary, one could, on the basis of these findings say that a student who ranks in the lower third of his class, should not be accepted by medical schools, and that a student who is not recommended for acceptance by his college is an even greater risk, so far as making good is concerned. True, it is not possible to predict definitely what these students may do in medical school, but the data are worth considering. They may prove helpful in the selection of medical students. Year after year, none, or few of the students coming from certain arts colleges make a creditable record. Admitting officers could, if they wished to do so, refuse to accept applicants from these colleges—but, who can predict that a Pasteur, a Lister, a Theobald Smith, a Welch, an Osler—ad infinitum—may not emanate from such a source. The proper selection of medical students, no matter how carefully made or on what basis, always has been and, probably, always will be a difficult proposition.

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JOURNAL  
OF THE  
*Association of American Medical Colleges*

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Volume 10

MAY, 1935

Number 3

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*American Students  
in Anderson College of Medicine  
Glasgow, Scotland*

On the request of the Council on Medical Education and Hospitals of the American Medical Association, the application of seventy-nine Americans in attendance at the Anderson College of Medicine, a so-called extramural school, of Glasgow, Scotland, was checked for the years 1932, 1933 and 1934. The cards on file in the office of the Association of American Medical Colleges, numbering nearly 100,000, which form the basis of the study of applicants made in each of the three years mentioned above, were the source of the information secured for the Council.

The list submitted contained the names of seventy-nine American students. They were not grouped in classes. The results of the investigation lead to the conclusion that all four classes or years of the medical course were represented.

No cards are on file for thirty-six of the seventy-nine students. They may not have applied to any of our medical schools, or they may have applied during the years 1930 and 1931 when the study of applicants was not made. Nor do their names appear in the file of American students whose credentials were submitted for evaluation to the Association, with one exception. Therefore, the assumption must be correct that none of these students, with the one exception, is included in the Register of Medical Students of Great Britain maintained, by authority of the law, by the General Medical Council of Great Britain. The credentials of all American students who

seek such registration are submitted either to this Association or to the Council on Medical Education. A file of such applicants is kept in the office of this Association.

Of the seventy-nine students concerned in this research, thirty-six had not made application to one of our medical schools in the years 1932, 1933 and 1934. Of the forty-three students having made application in one or two or each of these three years, only six had been accepted. Four applicants had only one acceptance; one applicant had two and one had three acceptances. These forty-three applicants made 651 applications, an average of almost fifteen applications per man. The largest number of applications made by an applicant in one year was 28; in two years, 37; in three years, 70. The last mentioned applicant also applied for registration on the medical students' register. His application and credentials were submitted to this office. When the report was received by the General Medical Council of Great Britain, the applicant evidently was refused registration and is now registered in Anderson College. The next largest number of applications in one year were: 27, 26, 21; in two years: 25, 23, 15; in three years: 38, 37, 35. Twenty-seven of the forty-three applicants made more than ten applications each.

On the basis of the years in which these applications were made it is apparent that the forty-three students are distributed in the medical school as follows: Freshman class, 32; sophomore class, 7; junior class, 4.

Twenty-five of the forty-three applicants applied in only one year; twelve

applied in two years and six applied in all three years, i.e., 1932, 1933 and 1934.

What will become of these students when they have graduated and return to the United States seeking licensure? In February, 1933, The Federation of State Medical Boards, the New York Board of Regents and the National Board of Medical Examiners adopted the following resolutions, respectively:

**FEDERATION OF STATE MEDICAL BOARDS**

1. That no American student matriculating in a European medical school subsequent to the academic year 1932-1933 will be admitted to any state medical licensing examination, who does not, before beginning such medical study, secure from a state board of medical examiners, or other competent state authority, a certificate endorsed by the Association of American Medical Colleges or the Council on Medical Education and Hospitals of the American Medical Association, showing that he has met the premedical educational requirements prescribed by the aforementioned associations.

2. That no student, either American or European, matriculating in a European medical school subsequent to the academic year 1932-1933 will be admitted to any state medical licensing examination, who does not present satisfactory evidence of premedical education equivalent to the requirements of the Association of American Medical Colleges, and the Council on Medical Education and Hospitals of the American Medical Association, and graduation from a European medical school after a medical course of at least four academic years, and submit evidence of having satisfactorily passed the examination to obtain a license to practice medicine in the country in which the medical school from which he is graduated is located.

These recommendations have also been endorsed by the individual state medical boards.

**NEW YORK BOARD OF REGENTS**

In harmony with the regulations adopted by the Federation of State Medical Boards, the New York State Education Department announces that in the case of American or European medical students matriculating on or after March 1, 1933, a course of study in a European medical school will not be accepted as meeting the professional requirement for admission to the New York medical licensing examination if the applicant has not

(a) Had, prior to beginning the first year of medical study, the preliminary general education required by the rules of the New York State Education Department—namely, the satisfactory completion of a two years' course of study in a registered college of liberal arts and science, or its equivalent as determined by the Commissioner. The two years of study shall include English, six semester hours; physics, six semester hours; biology, six semester hours; chemistry, 12 semester hours, including an approved course in organic chemistry, and

(b) Graduated from a European medical school after the completion of not less than four satisfactory courses of not less than eight months each, including the passing of the examination and the completion of the internship leading to any requisite for the license to practice medicine in the country where such medical school is located.

**NATIONAL BOARD OF MEDICAL EXAMINERS**

The language of the rule as adopted by the National Board of Medical Examiners is as follows:

That no student, either American or European, matriculating in a European medical school subsequent to the academic year 1932-1933 will be admitted to the examination of the National Board of Medical Examiners who does not present satisfactory evidence of premedical education equivalent to the requirements

of the Association of American Medical Colleges and the Council on Medical Education and Hospitals of the American Medical Association, and graduate from a European medical school after a medical course of at least four academic years, and obtain a license to practice medicine in the country in which the medical school from which he graduated is located.

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These resolutions were published in the Journal of the American Medical Association and in the JOURNAL of the Association of American Medical Colleges. They were also forwarded to the General Medical Council of Great Britain and to the president of this Council. But the exodus continues.

Since 1930 the secretary of this Association has received from the General Medical Council the credentials of all Americans seeking admission to the British medical students register. Since the Fall of 1934 he has been serving in his official capacity as secretary of this Association. During the first year more than 600 such applications were evaluated. The greatest number from any one school was 228. In the succeeding years there was a considerable drop in the number of applications. Thus far in 1935 only five applications have been received. Of course, it is not possible to state how many applications have been made to British schools by Americans who do not seek registration on the British medical students register. As a rule, students who plan entering the so-called extramural medical schools, of which there are three, do not go on the register. Judging from the number in attendance at Anderson, the number must be large, much larger than that of the registered students.

It would not seem fair to these applicants to accept them as it is virtually impossible for them to return to this country to practice under the resolutions

adopted in 1933 by the Federation, the New York Board and the National Board. The medical schools involved apparently do not concern themselves with fate of these students who doubtless form a large part of their student body. Do the students know about these resolutions? In view of the fact that considerable publicity was given to the resolutions, and that Americans have corresponded with the office of this Association in regard to these resolutions, it would seem that knowledge of them is current to some extent at least. If these students know about these resolutions, then it is possible that they expect to be able to dodge the issue when they make application for licensure. Or, they may be hopeful that some state board will not abide by the action of the Federation and then secure licensure by reciprocal registration in the state in which they wish to practice permanently. Only time can give the answer.

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#### *Council on Medical Education and Hospitals of the American Medical Association*

At a recent meeting of the Council it was resolved that the approval of a medical school be withdrawn at the first meeting of the Council if on inspection it is found that it does not and cannot possibly meet the standards of the Council. Two schools have already been taken off the list of "approved" medical schools.

It was further resolved that at the close of the current academic year the Council should review all inspections that have been made and take appropriate action.

It was resolved that a communication be sent officers of medical schools calling attention to the following paragraph from the "Essentials of an Acceptable Medical School."

The number of students to whom an adequate medical education can be given

by a college is related approximately to the laboratory and hospital facilities available and to the size and qualifications of the teaching staff. A close personal contact between students and members of the teaching staff results in an efficiency which is not possible in an institution where the number of students is excessive.

Although only about one third of the schools have been visited, it is already apparent that this requirement of the "Essentials" is not being generally met and that a large proportion of the schools are accepting larger numbers of students than they can properly teach.

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#### *Dr. Bachmeyer Appointed Acting Treasurer*

Dr. B. C. H. Harvey, treasurer of the Association of American Medical Colleges, has been delegated by the University of Chicago as its representative at the meeting of the International Association of Anatomists to be held in Europe this summer.

The executive Council has appointed Dr. A. C. Bachmeyer, associate dean of the Division of Biological Sciences and director of University Clinics to serve as acting treasurer from June 1 to October 1, 1935.

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#### *Scholarship in Psychiatry in Paris*

Under the auspices of the Board of Governors of the United States House of the Cité Universitaire in Paris, a Woolley Scholarship is offered for the year beginning October 1, 1935, to a student in

psychiatry. The scholarship consists of a room in the United States House and \$600 for the year, payable quarterly.

To qualify for this opportunity a candidate must: (1) be an American citizen; (2) hold the M.D. degree or be in the last year of study for that degree; (3) be under 30 years of age and unmarried; (4) have a good working knowledge of the French language.

For application blanks, apply to the Institute of International Education, 2 West 45th Street, New York City.

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#### *Toronto Meeting*

The Royal York Hotel has been selected as headquarters for the forty-sixth annual meeting of the Association of American Medical Colleges to be held in Toronto, October 28, 29 and 30, 1935.

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#### *Nathan Goldberg Becomes Neale Strong*

Nathan Goldberg attended Emory University School of Medicine for freshman work during the academic year 1931-1932. He registered at the University of Michigan in the summer session of 1932, in the regular session of 1932-1933, in the summer session of 1933 in the Graduate School and again in the Graduate School in September, 1933, and in the Medical School in February, 1934. He was dropped by the Medical School in June, 1934.

January 9, 1935, the Supreme Court of King's County, Borough of Brooklyn, permitted Nathan Goldberg to change his name to Neale Strong.

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## College News

### *Johns Hopkins University School of Medicine*

An additional gift of \$150,000 was received from the estate of Joseph Raphael DeLamar, who died in 1918. A fund of \$4,706,450, which has been paid to the medical school over a period of years under Mr. DeLamar's will, supports many activities, including the DeLamar Lectures in Hygiene at the Johns Hopkins University School of Hygiene and Public Health. The will provided that, after other bequests had been made, the residue was to be divided so that one-third went to the medical school and another third to Columbia University College of Physicians and Surgeons. This is the authorization for the recent gift. The DeLamar Lectures were established "to give to the people of the United States generally the benefits of increased knowledge concerning the prevention of sickness and disease and also concerning the conservation of health by proper food and diet."

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### *Medical College of Virginia*

Faculty changes and additions for the session 1935-1936 in the major faculty are: Dr. Fred M. Hodges, professor of clinical radiology; Dr. Daniel D. Talley, professor of clinical radiology; Dr. Harry Walker, assistant professor of medicine; Dr. L. C. Riggan, lecturer in preventive medicine and public health; Dr. Herman P. Thomas, associate professor of economics and sociology.

Dr. Lawrence T. Price has been made emeritus professor of clinical genitourinary surgery. Doctor Price was a member of the faculty for thirty years prior to his retirement last year.

The Saint Philip Hospital Postgraduate

Clinic for Negro physicians, as conducted annually by the College, will be held from June 17 to June 29, 1935. This will be the fifth clinic of its kind, the work being subsidized by the General Education Board of New York.

Rare Chemicals, Incorporated, Neponsit Park, N. Y., has established a fellowship of \$1,500 in the department of pharmacology for the purpose of making quantitative and qualitative comparisons of the various purified fractions of digitalis. Eli Lilly and Company of Indianapolis renewed its grant of \$1,200 for further research work in arthritis. Parke Davis & Company made a grant of \$1,500 for research work in the department of pathology.

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### *University of Illinois College of Medicine*

Dr. William W. Cort, professor of helminthology, Johns Hopkins University School of Hygiene and Public Health, delivered the Gehrman Lectures, April 8, 9 and 10. His subjects were "Ascariasis in Children in the United States," "Epidemiology and Control of Schistosomiasis in Egypt," and "The Hookworm Problem in the United States."

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### *University of Minnesota Medical School*

At the commencement convocation for the winter quarter held March 31, the degree of bachelor of medicine was conferred on twenty-five candidates, doctor of medicine on six candidates. There were also thirty-two graduates in nursing accredited to the medical school.

An extension course in refraction was given April 1-28, designed for rural medical practitioners. The course was

arranged to furnish the elements of ophthalmology, the elementary physiology of vision, physiologic optics and testing and recording of vision. The mechanical problems of neutralization of lenses and different methods of determining refractive errors and muscle imbalance were taken up. The theory of and practice in skiascopy and postcycloplegic refraction were also included.

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*Wake Forest College  
School of Medicine*

Drs. William B. Dewar, Hubert A. Royster and Hubert B. Haywood, all of Raleigh, North Carolina, have been added to the faculty of the school with the rank of professors of medicine. They will give second year students bedside instruction at the Rex and the St. Agnes hospitals. This instruction will be begun immediately, thus establishing a strong connecting link between the preclinical and the clinical years in a medical school which up to the present offers only the first two years of the medical course.

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*Yale University  
School of Medicine*

Robert Chambers, Ph.D., research professor of biology, New York University, presented the Harry Burr Ferris Lecture in Anatomy, January 11. His subject was "Mechanics of Cell Division."

A series of conferences on problems relating to cancer research was conducted January 24-31, by Dr. Ernest Laurence Kennaway, director of the Research Institute of the Cancer Hospital, London. The purpose was an interchange of ideas between investigators in related fields. They were made possible by the trustees of the Anna Fuller Memorial Fund, established in 1931 by the bequest of the late Egbert C. Fuller of New Haven for the study of cancer.

Edward Sapir, Sc.D., professor and head of the department of anthropology,

Yale University, made an address on "Human Beings as Personalities," March 4, in the series of lectures on the backgrounds of medical practice which opened at the university January 14. These lectures are under the auspices of the department of public health of the university and are designed to help medical students especially to gain a broader view of human society and the rôle of medicine in it. Dr. Sapir's lecture, February 18, on "Human Beings as Defined by Culture," was also included in the series. The first three lectures were given by Dr. Henry E. Sigerist, director, Institute of the History of Medicine, Johns Hopkins University, Baltimore.

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*Indiana University  
School of Medicine*

The tenth annual two weeks course in otolaryngology was conducted April 15-27. The course consisted of complete and minute dissection of the head and neck with practical applications by Dr. John F. Barnhill, and twelve mornings of clinical instruction and surgery by Dr. Barnhill and members of the staff in otolaryngology of the medical school.

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*University of Pennsylvania  
School of Medicine*

Drs. Thomas G. Miller, Richard A. Kern and Charles C. Wolfert, assistant professors of medicine, have been promoted to clinical professors of medicine. Dr. Truman G. Schnall, assistant professor of medicine, has been promoted to associate professor of medicine.

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*Women's Medical College*

In commemoration of twenty-five years of service to the college, Dr. Martha Tracy, dean, was presented with an automobile by the trustees, faculty, students and friends, and her portrait was presented to the college at the celebration of its eighty-fifth anniversary.

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*University of Chicago  
Division of the Biological Sciences*

A grant of \$3,200 has been made by Armour and Company to support a fellowship in the Department of Physiological Chemistry for the study of the isolation of a female sex hormone from ovarian tissue.

Both the Bristol-Myers Company grant and the Louis D. Beaumont Trust Funds for special research in physiology have been increased during the past month to allow for extension of the studies being made.

In the will of Miss Mathilde L. Koch provision was made that her estate should be held in trust for her sister but that the capital might be used at the discretion of the trustees if requested by the sister. On the death of the sister the trust shall be passed to the University of Chicago to be used to found a research fellowship in the Department of Physiological Chemistry and Pharmacology to be known as the Waldemar Koch Research Fellowship. The income from this fellowship is to be applied in payment of tuition and/or other expenses for work in the field of biochemistry, preferably on the chemistry of the central nervous system.

The Howard Taylor Ricketts Prize is awarded annually to a student in the Department of Pathology or Hygiene and Bacteriology for some outstanding piece of research.

This year the committee will consider only such research as has been published or that has been prepared in a form essentially suitable for publication. Specifically, the committee will be glad to receive any papers which have appeared since the beginning of the spring quarter, 1934, theses prepared for the spring, summer and autumn quarters 1934, or the winter quarter 1935, and any complete presentation of work such as a paper

prepared for submission to a journal or in process of publication.

The papers should be submitted to the dean of the division of biological sciences, Billings Hospital, not later than Thursday, April 25. The award will, as always, be announced on May 3, the anniversary of the death of Dr. Howard T. Ricketts.

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*University of California  
Medical School*

Three members of the University of California faculty have been given Grants-in-Aid funds from the National Research Council, for the further pursuit of their work. They are Professor David M. Greenberg, associate professor of biochemistry; Professor Albert P. Kreuger, associate professor of bacteriology; and Denis L. Fox, instructor in the physiology of marine organisms, Scripps Institute of Oceanography.

Dr. Chauncey D. Leake, professor of pharmacology, medical school, presented the second annual Epsilon Alpha lecture March 19. His subject was "The History of Anesthesia." Epsilon Alpha, the honor society of the College of Dentistry, sponsors an annual lecture on some subject related to dentistry or to the ancillary sciences. These lectures are open to the staffs and students at the Medical Center.

Dr. Mont R. Reid, professor of surgery, University of Cincinnati College of Medicine, spoke to the faculty and students March 1, 1935, his subject being "Thyroid Disturbances."

Dr. Esmond R. Long, professor of pathology and Director of the Laboratory of the Henry Phipps Institute of the University of Pennsylvania School of Medicine, spoke to the faculty and students April 1 on "The Chemistry of the Tubercle Bacillus."

Dr. Frederick M. Allen, of New York City, a graduate of the University of

California Medical School and a distinguished contributor in the field of diabetes and other metabolic diseases, spoke to the faculty and students March 16 on "Diabetes."

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### *Harvard Medical School*

Dr. Walter B. Cannon, George Higginson professor of physiology, will serve as visiting professor of physiology at the Peiping Union Medical College from April 15 to June 1. He plans to attend the International Physiological Congress in Leningrad and Moscow in August.

Dr. Charles S. Burwell, professor of Medicine in Vanderbilt University School of Medicine, has been appointed dean and research professor of medicine. Dr. Cecil K. Drinker, professor of physiology and assistant dean of the Harvard School of Public Health, has been appointed dean. The deanships are now held by Dr. David L. Edsall, who retires August 31, 1935.

Dr. Frederick T. Lord, since 1930 clinical professor of medicine, was retired from the faculty as professor emeritus, January 1.

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### *New York Homeopathic Medical College*

Dr. William Salant, formerly director of Biological Laboratories, Cold Spring Harbor, and guest professor of pharmacology at the New York Homeopathic Medical College, recently began a series of Wednesday afternoon lectures at the college at 2:00 p. m. The general topic announced is: Foundations of Pharmacology: Physiological and chemical processes and their influence on the action of drugs and poisons.

March 27: Functional changes and the effect of diet on the action of drugs.

April 3: Heat regulation in health and in fever. Action of antipyretics in health and febrile conditions. The action of other compounds in hyperthermia and hypothermia.

April 10: The endocrines, their function and effect on pharmacologic reactions.

April 24: The action of drugs in renal disturbances and disease of the liver.

May 1: Acid-base balance. The effect of acids and alkali on different organs. Cell permeability and pharmacologic reactions. Hydrogen ion concentration and cell permeability.

May 8: Calcium metabolism and the rôle of the parathyroids. Effect of calcium on cell permeability and function of different organs.

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### *University of Louisville School of Medicine*

Dr. Duff Allen, of the Department of Surgery, of Washington University, St. Louis, delivered the annual Phi Beta Pi lecture on Saturday, March 9. His subject was "Some Newer Aspects of Surgery of the Thyroid Gland."

Dr. William A. Bryan, Worcester, Massachusetts, spoke to the students on Thursday afternoon, March 7. His subject was "Modern Psychiatric Treatment Methods."

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### *University of Cincinnati College of Medicine*

Dr. David A. Tucker, Jr., associate clinical professor of contagious diseases has been appointed professor of the history of medicine. Dr. George M. Guest was promoted to associate professor of pediatrics. Dr. Robert D. Maddox was appointed lecturer in military medicine.

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### *University of Rochester School of Medicine*

Dean George H. Whipple, co-winner of the Nobel Prize in Medicine for 1934, was the guest of honor at a dinner given by the Rochester Academy of Medicine in January.

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*University of Virginia  
Department of Medicine*

At the meeting of the University Medical Society held February 6, Dr. Tiffany J. Williams was elected President and Dr. Alfred Chanutin Secretary for the coming year.

February 25, Dr. Finley Gayle, Jr., of Richmond, Virginia, spoke before the Society on "Selective Human Sterilization." February 22, Dean J. C. Flippin addressed the local chapter of Sigma Xi on the subject of "Recent Trends in Medicine." February 19, Dr. H. B. Mulholland addressed the staff of the Martha Jefferson Hospital on the "Modern Treatment of Diabetes Mellitus." March 6 Dr. Kenneth Maxcy and Dr. J. Edwin Wood spoke before the Sullivan and Johnson Counties Medical Society at Kingsport, Tennessee, on "Rheumatic Fever." Dr. Wilson G. Smillie, professor of public health at the Harvard Medical School, visited the medical school March 10. Dr. Edwin Lehman and Dr. W. H. Parker addressed the Norfolk Academy of Medicine March 11 on the subject of "Cerebral Trauma." March 11, Dr. D. C. Smith addressed the Albemarle Medical Society on "Skin Fungi."

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*Georgetown University  
School of Medicine*

The lecturer on the Kober Lecture Foundation for 1935 was Dr. Laurence S. Otell. His subject was "Thorium as a Diagnostic Agent."

This lectureship was founded by the late Dr. George M. Kober, for many years dean of the school, in 1920, by a gift of \$10,000, the income of this sum being used annually in awards for lectures by men who have contributed to the progress and achievement of the medical sciences or preventive medicine as a vindication of animal experimentation.

Dr. W. F. R. Phillips, professor of anatomy, died February 16 of pneumonia. Dr. Phillips was for many years identi-

fied prominently with medical education as a dean and a professor of anatomy in George Washington University, the University of Alabama, the Medical College of the State of South Carolina and Georgetown University. He was for a long time a member of the executive council of this association, chairman of various committees, and was also an associate member until this member group was abolished in 1934.

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*New York University  
College of Medicine*

The Council of New York University has approved the change of name of the New York University, University and Bellevue Hospital Medical College to New York University College of Medicine.

Dr. Robert James Carlisle, who had been connected with the College of Medicine for forty-eight years, died January 15, 1935. Since 1924 he had served as professor of medicine.

New appointments and changes in titles: Lewis D. Stevenson, assistant professor of neuropathology; Howard C. Taylor, Jr., assistant professor of obstetrics and gynecology; Edward R. Maloney from assistant professor to associate professor of dermatology and syphilology; Evan W. McLave, from assistant clinical professor to assistant professor of clinical medicine; Harold R. Merwarth, from assistant clinical professor to clinical professor of neurology; Meredith F. Campbell, from instructor to clinical professor of urology; Aaron Brown, Morris Goodman and William H. Lewis, Jr., from instructor to assistant clinical professor of medicine.

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*University of Toronto  
Faculty of Medicine*

The ninth annual Donald C. Balfour Lecture in Surgery was delivered April 5th by Dr. Evarts A. Graham, professor of surgery in Washington University, St. Louis. His subject was "Primary Carcinoma of the Lung or Bronchus."

## General News

### *Hospital Administration Course at University of Chicago*

A course in hospital administration for graduate students was opened in the autumn of 1934 under the auspices of the School of Business, with the cooperation of the University of Chicago Clinics and Hospitals. The number of students admitted has been limited to six. None have been accepted except those who hold a Bachelor's degree from a recognized college or the degree of Doctor of Medicine or Doctor of Public Health, and who contemplate entering the field of hospital and clinical administration.

It has been the intention to secure students of varied training and background in order that this educational experiment can be worked out in proper adaptation to the needs of different types of students. Thus of the six selected, four are men and two are women. One is a physician; one a nurse; two have recently graduated from the School of Business at the University of Chicago; one has recently taken his Bachelor's degree from an eastern college without special previous preparation in business or biological subjects; one has a similar background but has had experience for some years in the administrative office of a hospital. All but one of the students have had some definite contact with hospitals during the period of college or professional training.

During the autumn quarter the students spent most of their time in academic courses planned for each individually, so as to supplement the student's previous training. Those with a medical background, therefore, gave most of their time to business courses while the students who had pursued these subjects took certain basal courses in the health field.

Beginning in January, 1935, the second quarter, a large part of the time is devoted to practical work in hospitals and clinics in Chicago or vicinity, and to conferences with instructors and specialists in various branches of hospital administration. It is expected that students will spend three or four quarters in residence at the University, followed by a period of administrative internship, and that each will undertake a piece of investigative work, which, in the case of those who are candidates for a graduate degree, will serve as the thesis required.

Cooperating with Dean William H. Spencer of the School of Business in planning and administering this course are Dr. Arthur C. Bachmeyer, director of the University of Chicago Clinics, and Dr. Michael M. Davis, director for medical services of the Julius Rosenwald Fund.—*Bull. Am. Hosp. Asso.*, March, 1935.

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### *Grants Available for Research*

The Committee on Scientific Research of the American Medical Association invites applications for grants of money to aid in research on problems bearing more or less directly on clinical medicine. Preference is given to requests for moderate amounts to meet specific needs. For application forms address the Committee on Scientific Research at 535 North Dearborn Street, Chicago.

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### *Prize for Essay on Venereal Diseases*

The council of the British Medical Society for the Study of Venereal Diseases announces a prize of £18 to be awarded for the best critical review dealing with any venereal disease considered from any angle. Contributions

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of about 6,000 words should be typed on one side of the paper, with a quarter of a page as a margin and sent to the secretary of the society, 43 Queen Anne Street, London W. 1 before July 31, 1935.

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### *French Students Protest Against Foreigners*

The strike of medical students in the chief university centers of France ended temporarily in Paris, after a delegation had presented the students' protests to the minister of public instruction. In the medical schools and also in the other departments of the universities over 20 per cent of the 38,000 students are foreigners. Many of these, after graduation, remain in France, where all the professions are overcrowded. The students maintain that too many privileges are accorded foreigners, especially in the medical schools. Many foreigners are admitted who, when matriculated, aim only to have a so-called honorary diploma, called "Diplôme universitaire" bestowed on them. This diploma does not require a preliminary two years of study leading to the bachelor of arts degree. The latter is indispensable for those who wish to receive a state diploma entitling them to practice medicine, in France. The claim is made that a change from the honorary to the legal diploma is made too easy for foreigners in the provincial universities. According to the "Armbruster law" no one will be admitted, on credentials, to the fourth year of the medical school, as has been the case in the past, but will be compelled to spend seven years in medical studies, in addition to a bachelor of arts degree, before being eligible to a state license. Furthermore, no foreigner will be permitted to practice medicine in France who has not been naturalized. A certain number of exceptions, according to this law, can be made to this last requirement, in the case of foreigners from countries which

do not demand naturalization of French citizens in order to have the right to practice. The students maintain that the Armbruster law is a great protection against foreigners remaining in France as physicians but that it is not being enforced and that too many foreign undergraduates are allowed to occupy internships and replace practitioners temporarily. One of the strikers' demands was a modification of this law, to the effect that any foreigner desiring to study medicine must have been naturalized for a period of ten years before entering a medical school.—Paris Letter, *J.A.M.A.*, March 9, 1935.

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### *Regulation of Foreign Medical Practitioners in France*

In the *Concours médical* of February 17 appears the draft of a bill introduced in the French house of representatives by Mr. Dommange, which will place a serious obstacle in the path of any physician of foreign birth who seeks to practice in France. In July 1934 a bill was passed and became a law to the effect that naturalized citizens could not be admitted to the bar or occupy any official position until ten years had elapsed since their becoming French citizens. The Dommange bill proposes to extend this ten year period to the medical profession in order that a physician shall during such interval become thoroughly familiar with the language and customs of the country in which he intends to practice. This proposed law is in line with the recent agitation on the part of the medical students against the constantly increasing number of foreigners in the schools and hospitals of France.

The Armbruster law, now in force, will virtually put a stop to foreigners practicing medicine in France, but unfortunately it cannot affect foreign students already pursuing their studies in French medical schools. It is applicable only to

those matriculating last fall. The Armbruster law left a loophole in the form of permitting citizens of those countries which do not require naturalization for French citizens who wish to practice medicine or dentistry in the respective country to do so in France. This loophole will probably be closed if the Dom-mange amendment becomes a law, as

every one who wishes to practice medicine or dentistry will either have to be naturalized ten years before receiving such a license or, at least, have lived in France a similar length of time, even in the case of countries in which reciprocity exists, before being allowed to practice.—PARIS LETTER, *J. A. M. A.* March 30, 1935, p. 1182.

## Book News

### *Surgical Diseases of the Chest*

By Evarts A. Graham, M.D., Professor of Surgery; Jacob J. Singer, M.D., Associate Professor of Clinical Medicine, and Harry C. Ballon, M.D., C.M., formerly Assistant Professor of Surgery, Washington University School of Medicine. Lea & Febiger, Philadelphia. 1935. Price, \$15.

This work is distinctive in thoracic surgery in that it is so organized as to be as valuable to the internist as to the surgeon. It indicates to the medical man the help that may be rendered in many conditions by a surgical attack and it should increase his appreciation of the accomplishments and possibilities of surgery in this field. None of the essential aspects of operative surgical procedures has been neglected and many of the operations have been described and illustrated in detail. The book reflects the very latest advances in the rapidly expanding field of thoracic surgery. Its authors are recognized authorities and this book summarizes their individual and unusual experiences in thoracic surgery. The numerous illustrations and an extensive, carefully prepared bibliography, arranged according to clinical entities, are noteworthy.

### *Diseases of the Mouth and Their Treatment*

By Herman Prinz, D.D.S., M.D., Professor of Materia Medica and Therapeutics, University of Dentistry, University of Pennsylvania, and Sigmund S. Greenbaum, M.D., Associate Professor of Dermatology and Syphilology, Graduate School of Medicine, University of Pennsylvania. Lea & Febiger, Philadelphia. 1935. Price, \$9.

This work has been prepared for both the medical and dental professions. Its specific object is to gather the enormous mass of scattered information concerning the diseases of the mouth and their treatment and to evaluate these contributions carefully according to their intrinsic merit. This material has been drawn upon freely and in every instance the proper credit has been indicated. The authors of this work combine the viewpoint of the physician with that of the dentist and, guided by their extensive classroom experience and clinical practice, have presented their subject as the medico-dental problem that it really is. The book contains many excellent and original illustrations.

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